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Test of Survival Weapons

AD-16423

PART A

SYNOPSIS

1. This is a report of tests conducted to determine the performance of various Colt and Smith & Wesson revolvers in view of their possible adoption as a weapon for arming pilots and aircrewmen. Also included in the tests were various holsters which were to be evaluated as a possible replacement for the present shoulder holster.

2. Results of the tests indicate that the S&W Victory, the present service arm, is a satisfactory weapon with the addition of Magna grips modified to include additional checkering near the backstrap and a grip adapter of the Mershon type.

3. If future purchases of the S&W Victory model are made, it is recommended that the weapon have modified Magna grips and wide spur hammer.

4. If it is considered desirable to adopt a lightweight revolver, the results of the tests indicate that the Smith & Wesson Military and Police Model (Aluminum) with three (3) inch barrel is a suitable replacement for the Victory.

a. The following desirable features were on the test weapon.

(1) Fixed rear sight

(2) Steel cylinder

(3) Wide spur hammer

(4) Steel barrel

(5) Front sight a part of the barrel forging

b. The following desirable features are available with slight modification:

(1) Magna grips with additional checkering near the backstrap.

(2) Large type (standard) cylinder latch.

(3) Butt Swivel.

(4) Ejector rod locking device.

c. The following desirable features require redesign:

(1) Trigger modified to eliminate the notch which is exposed when the trigger is depressed.

(2) Enlarged trigger guard.

5. It is recommended that grip adapters, in various sizes, of the Mershon type be put in the supply system.

6. The Pocket Holster was considered superior to the other types tested.

7. The "Patch" type ammunition carrier is considered to be an excellent method of carrying ammunition.

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PART B

INTRODUCTION

1. AUTHORITY:

This test was authorized by reference (a) under Task Assignment NPG-Re5-1-17-53.

2. REFERENCES:

a. BUORD ltr Re5c-JME:jpb NP9 of 5 Dec 1952
b. BUORD ltr Re5c-JME:hts Ser S79-4 (16) of 4 Mar 1953
c. BUORD ltr Re5c-JME:jpb Ser S79-4 of 6 Jan 1953

3. BACKGROUND:

The Air Force adopted a caliber .38 Special Light Weight Revolver for aircrew use. The Chief of Naval Operations requested the Bureau of Ordnance to evaluate various light weight revolvers and to report its findings.

4. OBJECT OF TEST:

The object of the test was to evaluate the weapons listed in references (a) and (b) as well as various holsters for the weapons, to determine if they were superior, and in what respects, to the weapon and holster now carried by pilots and aircrewmen.

5. PERIOD OF TEST:

a. Date of Project Letter	5 Dec 1952
b. Date Commenced Test	19 Dec 1952
. Test Completed	25 June 1953

PART C

DETAILS OF TEST

6. DESCRIPTION OF ITEMS UNDER TEST:

a. Photographs of the weapons under test are contained in Appendix (A), Figures 1-14. Detailed information on each weapon is contained in Appendix (C), Table #1.

b. The holsters, which were purchased as authorized by reference (c), are illustrated in Appendix (A), Figures 15-39. Also illustrated are various modifications of the "Pocket Holster" which were developed by the Naval Proving Ground.

7. DESCRIPTION OF TEST EQUIPMENT:

a. Ammunition:

(1) Remington Kleanbore .38 Special, 158 grain bullet with steel jacket (Lots RA-5096, RA-5127, and RA-5094).

(2) Western .38 Special Super Match.

b. Salt Vapor Cabinet.

c. Cold box at -70°F.

d. Cold Chamber at -70°F.

e. 25 yard Standard American Pistol Targets.

f. 50 yard Standard American Pistol Targets.

g. National Silhouette Targets with 25 yard Standard American Pistol Target superimposed over lower chest. Target measured 41" in height and 19 1/2" across the shoulders. (Appendix (A), Figure 43).

h. Machine Rest for accuracy tests. (Developed by Naval Proving Ground).

i. Fir boards, aluminum plates, and other small items of equipment.

8. PROCEDURE:

a. Military characteristics, as listed in Table #1, Appendix (C), were determined and recorded.

b. Target Accuracy Tests:

(1) Results recorded for the Navy qualification course.

(2) Results recorded for twenty (20) shots timed fire at 25 yards on the National Silhouette Target.

(3) Results recorded for twenty (20) shots slow fire at 50 yards.

(4) Results recorded for twenty (20) shots timed fire at 50 yards on the National Silhouette Target.

(5) Results recorded for Machine Rest accuracy tests (Appendix (C), Table #2).

c. Penetration Tests:

(1) 7/8" Fir boards:

(a) Results recorded for each type weapon at the following ranges:

1. 5 yards - three (3) rounds

2. 25 yards - three (3) rounds

3. 50 yards - three (3) rounds

d. Cold Weather Test:

(1) One of each type weapon and the ammunition were placed in the cold chamber at -70°F for 24 hours. Ten (10) rounds double action and ten (10) rounds single action were fired from the cold chamber, and the results were recorded.

(2) One of each type weapon and the ammunition were placed in a cold box at -70°F for 24 hours.

(a) Removed and fired ten (10) rounds double action and ten (10) rounds single action. Replaced in -70°F cold box.

(b) Removed after 24 hours and fired ten (10) rounds double action and ten (10) rounds single action. Replaced in -70°F cold box.

(c) Removed after four (4) hours and fired ten (10) rounds double action and ten (10) rounds single action.

(d) Results recorded for each phase of the above cycling tests.

e. Salt Vapor Test:

(1) Weapons as indicated below were placed in a 20% salt fog at 100°F for 96 hours. They were checked for functioning every 24 hours and the results were recorded.

(a) S & W Hammerless. This weapon was placed in the salt fog while wrapped in a transparent plastic bag (Rust Pruf Pistol Pouch).

(b) S & W Chiefs Special 2" barrel (aluminum).

(c) S & W Chiefs Special 2" barrel (aluminum).

(d) S & W Chiefs Special 3" (steel).

(e) Colt Official Police 4" (steel).

f. Endurance Test:

(1) One weapon of each type was fired a minimum of 500 rounds double action and 500 rounds single action. Largest total of rounds fired for any gun of each type is indicated in Appendix (C), Table #1.

(2) One S & W Combat Masterpiece and one S & W Military and Police Model 2" barrel were fired 500 rounds single action and 500 rounds double action using tracer ammunition. The weapons were not cleaned during the entire 1,000 rounds.

g. Holster Test:

(1) Various types of holsters were issued to pilots to be carried for several flights. Questionnaires were filled in on the completion of the flights and different type holsters were issued.

9. RESULTS:

a. Military Characteristics:

(1) Contained in Appendix (C), Table #1.

b. Accuracy Tests:

(1) Comparative target accuracy results are contained in Appendix (C), Table #1. Detailed results are contained in Appendix (C), Table #3.

(2) The need for a good machine rest was apparent for testing the inherent accuracy of the weapons. The requirements were that the machine rest simulate as closely as possible the human hand without including the human error of sighting or shifting grip. A machine rest was designed by the Naval Proving Ground (Appendix (A), Figures 41-42) which will give 1 1/4" X 1 1/4" groups at 50 yards with match ammunition and steel handguns. The results of the machine rest tests are included in Appendix (C), Table #2. Groups obtained with the machine rest were checked by arm rest groups and were found to be smaller than could be obtained by the most careful arm rest firing (steel guns).

(3) On the basis of the machine rest tests it is apparent that S & W and Colt weapons are generally comparable insofar as accuracy goes, the most notable exception being the Chiefs Special 3" vs the Police Positive. The Chiefs Special 3" was an unusually and consistently accurate weapon and the Police Positive (only one (1) available for test) was slightly less accurate than the usual Colt weapon.

(4) The machine rest would not outshoot an arm rest shooter with aluminum weapons; therefore, the aluminum weapons were fired from an arm rest (Appendix (C), Table #2). It is concluded that the accuracy of the lightweight 2" barrel weapons is considerably poorer than the accuracy of the steel weapons tested. There were no steel weapons with 2" barrels available; therefore, it could not be determined whether the poor accuracy obtained with the aluminum 2" weapons was due to barrel length or to the aluminum frame and cylinder. On the basis of the accuracy tests of the M&P 3" aluminum it is believed that the poor accuracy of the 2" weapons is due to barrel length.

(5) It appears that much of the poor accuracy obtained on these tests is due to poor ammunition (Part C, Section 9 f (4)).

(6) It was noted that many of the weapons had been poorly sighted at the factory. The result was that poorer scores were made at 50 yards than would have been with a properly sighted weapon. Several of the weapons shot one (1) foot off of the point of aim at this range.

c. Penetration Tests:

(1) One (1) revolver of each type was fired at a baffle consisting of 7/8" fir boards spaced 7/8" apart with the results as listed below. The results are the average of three (3) rounds at the ranges indicated:

Combat Masterpiece

5 yds. - 3.37"
25 yds. - 3.62"
50 yds. - 3.13"

Chiefs Special 3" Barrel

5 yds. - 3.00"
25 yds. - 3.13"
50 yds. - 3.06"

Victory Model

5 yds. - 2.88"
25 yds. - 2.94"
50 yds. - 2.88"

Police Positive 3"

5 yds. - 3.19"
25 yds. - 2.94"
50 yds. - 2.88"

Colt Lightweight (Cobra)

5 yds. - 2.44"
25 yds. - 2.50"
50 yds. - 2.44"

Official Police 3"

5 yds. - 2.94"
25 yds. - 3.13"
50 yds. - 2.94"

M&P Square Butt

5 yds. - 2.94"
25 yds. - 3.06"
50 yds. - 2.81"

Hammerless

5 yds. - 2.81"
25 yds. - 2.94"
50 yds. - 2.88"

Chiefs Special 2" Barrel

5 yds. - 3.13"
25 yds. - 3.00"
50 yds. - 2.88"

M&P Round Butt

5 yds. - 2.81"
25 yds. - 3.13"
50 yds. - 2.81"

M&P 3" Steel

5 yds. - 3.13"
25 yds. - 3.44"
50 yds. - 3.13"

M&P 3" Aluminum

5 yds. - 3.94"
25 yds. - 3.13"
50 yds. - 3.00"

(2) It was suspected from the results obtained with fir boards that the density of the wood varied so that the data obtained would be unreliable; therefore, a series of tests were run with a Baldwin-Southwark Test Machine to determine the force required to penetrate the fir boards which had been used for one test. A 5/16" steel rod with a rounded nose was used as the probe. The results were as follows (force in pounds):

(a) Detailed results:

Board	Near Center	3" from end	3" from opposite end
1	603	625	595
1	646	795	split
1	566	650	600
2	540	588	476
2	582	547	555
3	672	610	604
3	---	614	605
4	657	635	495
4	---	645	511

(b) Maximum spread for each board:

Board	High	Low	Difference
1	795	566	229
2	588	476	112
3	672	604	68
4	657	495	162

(c) As noted the difference between the extreme readings is 319 pounds. This difference is considered great enough to make the value of the results of any test utilizing fir boards of doubtful value.

(3) In the search for a more suitable medium for penetration tests it was determined to use aluminum plates since the thickness and hardness of these plates is constant not only between plates but between lots. The thickness of the plates was to be such that projectiles with any appreciable energy would penetrate; therefore, a baffle of .032 24ST3 plates was constructed. The plates were placed one (1) inch apart with three (3) sides supported. Although only three (3) rounds were fired for average, in view of wide velocity variations detected during the course of the test it appears that a minimum of five (5) rounds would be desirable. The results are as follows (number of plates penetrated):

PENETRATION

24ST Aluminum Plates

Chiefs Special 2" Barrel

5 yds. - 11
25 yds. - 12

Victory

5 yds. - 17
25 yds. - 17

Police Positive 3"

5 yds. - 16
25 yds. - 13

Official Police 3"

5 yds. - 14
25 yds. - 16

Chiefs Special 3" Barrel

5 yds. - 13
25 yds. - 15

Colt Lightweight (Cobra)

5 yds. - 14
25 yds. - 12

M&P 3" Steel

5 yds. - 16
25 yds. - 15

Combat Masterpiece

5 yds. - 20
25 yds. - 16

M&P 2" Square Butt

5 yds. - 16
25 yds. - 11

M&P 3" Aluminum

5 yds. - 16
25 yds. - 14

M&P 2" Round Butt

5 yds. - 13
25 yds. - 12

(4) On the basis of the above tests it is assumed that many of the apparent inconsistencies are due to the wide velocity variations obtained with all three lots of ammunition used. It has been determined also that variations in velocity, of some magnitude, are obtained between apparently identical weapons.

d. Cold Weather Tests:

(1) One of each type weapon was placed in the cold chamber at -70°F for twenty-four (24) hours and then fired through a port from the chamber. All weapons fired satisfactorily with the exceptions as noted below (cold weather lubricants not used):

(a) S&W M&P 2" Round Butt (aluminum frame and cylinder) could not be unlocked.

(b) S&W Chiefs Special 2" (aluminum frame and cylinder) could not be unlocked.

(2) One of each type weapon was placed in a cold box at -70°F for twenty-four (24) hours then removed and fired at ambient temperature. This test was intended to simulate the condition which would exist if a person carried his weapon into a heated space and then returned to cold air without removing the moisture which would condense on the weapon. The results are as follows:

(a) On several of the weapons - CS 2", M&P 3" Aluminum, CS 3", and M&P 2" Square Butt - the center rod in the ejector rod (the cylinder lock pin) froze in the retracted position which made it necessary to hold the cylinder in the closed position. It took from 3-5 rounds to thaw the weapon sufficiently for them to operate normally.

(b) On the M&P 3" Steel the cylinder stop depressed on the seventh round and would not return to the "lock" position. After the weapon had thawed for approximately five (5) minutes the stop returned to the normal position.

(3) Upon completion of the firings mentioned above the weapons were replaced in the cold box at -70°F for twenty-four (24) hours and then removed and fired with the following results:

(a) On several of the weapons - Hammerless, Combat Masterpiece, M&P 3" Steel, M&P 3" Aluminum, and M&P 2" Round Butt - the center rod in the ejector rod (the cylinder lock) froze in the retracted position which made it necessary to hold the cylinder closed. It took from three (3) to five (5) rounds for the weapons to thaw sufficiently for them to operate normally.

(b) The Combat Masterpiece had three (3) light hammer falls.

(c) The Colt Police Positive (steel) cylinder latch froze in the unlocked position. It was necessary to hold it locked for six (6) rounds.

(d) The cylinder latch on the Colt Official Police froze in the unlocked position making it necessary to hold it locked for six (6) rounds.

(e) The hammer of the Chiefs Special 3" would not stay on the single action sear. It would fire by "fanning" or double action.

(4) Upon completion of the above firings, the weapons were returned to the -70°F cold box for four (4) hours then removed and fired. The results are as follows:

(a) The center rod in the ejector rod (the cylinder lock) in all the S&W weapons except the Victory froze in the retracted or unlocked position from 1-5 rounds.

(5) The following observations are made as a result of cold weather tests:

(a) The flat latches such as are found on the S&W M&P 2" and Chiefs Special models are extremely undesirable as it is impossible to get enough purchase to exert the additional pressure necessary to unlatch them. Only by using a piece of wood or some other object behind the latch was it possible to unlatch many of the weapons.

(b) Low temperature lubricants are necessary for positive functioning at temperatures much below freezing.

(c) The size of the trigger guard on the large frame models is on the border line of being too small for anything but lightweight gloves and small hands. The trigger guard on the small frame models is too small for anything but lightweight gloves and small hands.

e. Salt Vapor Test:

Five (5) weapons were placed in a 20% salt fog at 100°F for 96 hours. The weapons were checked every 24 hours for functioning. The results were as follows:

Test of Survival Weapons

(1) S & W Hammerless. This weapon was enclosed in a "Rust-Pruf Pistol Pouch" for the entire test.

(a) 48 hours. No rust apparent. Fired 10 rounds.

(b) 72 hours. Slight rust where handled by salty hands only. Fired 10 rounds.

(c) 96 hours. Slight rust where handled by salty hands only. Fired 10 rounds.

(2) S & W Chiefs Special 2". When the weapons were placed in the salt vapor cabinet it was immersed in the salt solution and then dried as well as possible without disassembly before it was replaced in the salt fog.

(a) 24 hours. Fired 10 rounds without difficulty. Steel parts showed slight corrosion. Heavy salt deposits on entire weapon.

(b) 48 hours. Difficult to unlock. Action was stiff but loosened up upon firing. Ten (10) rounds fired without malfunction. Extraction was difficult. Corrosion of steel parts had increased. Heavy salt deposits on entire weapon.

(c) 72 hours. Very difficult to unlock. It was necessary to use a piece of wood to force the latch forward to open the cylinder. Heavy corrosion of steel parts. Very little corrosion of aluminum parts. Salt deposits heavy. It was necessary to strike the extractor rod against a solid object to remove empty brass which had been left in the weapon from the day before. Action was stiff at beginning of firing; however, the weapon was free upon completion of firing 12 rounds which were fired without malfunction.

(d) 96 hours. Very difficult to unlock. It was necessary to use a piece of wood and great force against the latch to unlock the cylinder. Extraction of old brass was very difficult. Action was free and smooth both single and double action. Extraction of fresh brass was easy.

(e) Upon disassembly, it was found that the aluminum surfaces were practically undamaged insofar as finish was concerned except in those areas of stress (around barrel) or abrasion. The frame was found to be cracked completely through to the barrel in the yoke recess. The exterior steel parts were found to be extensively corroded though not excessively so. The lock work was found to be only slightly corroded and that only in small spots.

(3) S & W Chiefs Special 2". This weapon was not immersed.

(a) 24 hours. 12 rounds were fired without difficulty. Corrosion in small amounts visible on steel parts. Heavy salt deposits.

(b) 48 hours. Difficult to unlock. It was necessary to use a piece of wood behind the latch to force it open. Latch was so stiff it was necessary to use two (2) hands to lock the weapon. Trigger stuck back. After the first shot the action loosened up and became quite smooth. Twelve (12) rounds were fired without further difficulty. Corrosion of steel parts had progressed slightly. Aluminum surfaces were practically undamaged.

(c) 72 hours. Difficult to unlock. It was necessary to use a piece of wood behind the latch to force the latch open. Extraction of previous day's brass difficult. Heavy deposits of salt made loading impossible without first removing the salt from the chambers. After the first shot the action became smooth. On round #4 the case separated 1/16" aft of the base of the projectile and attempted to carry through the bore. Pressure was so high that the top of the firing chamber, the bridge and the top of the frame over the barrel were carried away. The web between the firing chamber and one of the adjoining chambers and the web between the firing chamber and the ejector rod was ruptured (Appendix (A), Figures 44-47).

(4) S & W Chiefs Special 3" (steel). This weapon was not immersed.

(a) 24 hours. Twelve (12) rounds fired without difficulty. Slight corrosion was becoming apparent.

(b) 48 hours. Loading was easy. Action was very stiff. Two hands were necessary for cocking to fire single action (6 rounds). Hammer fall was normal. Two (2) hands were necessary for double action firing. Extraction was difficult. Rust was in patches over most of the weapon. Salt deposits were heavy.

(c) 72 hours. Weapon was easy to open and load. Old brass was hard to extract. Weapon could be fired with one hand single action. Trigger would sometimes stick back. Both hands were necessary for double action firing. Rust was heavy over most of the weapon. No parts of the weapon were frozen.

(d) 96 hours. Easy to open, extract old brass, and load. Single action could be fired with one hand but two (2) hands were necessary for double action. Trigger stuck back occasionally. Rust was heavy over most of the weapon but no parts were frozen.

(5) Colt Official Police 4" (Steel). This weapon was not immersed.

(a) 24 hours. Light rust over entire weapon. It could be opened, loaded, and fired with no difficulty.

(b) 48 hours. Rust over entire weapon. Latch was hard to operate at first but loosened up after it was worked a few times. Action was smooth. Twelve (12) rounds single action and twelve (12) rounds double action were fired with no difficulty.

(c) 72 hours. Heavy rust over the entire weapon. Difficult to open and cock. Action was stiff but after it was worked several times it loosened up. Trigger was slow to return to the forward position. Rapid fire would have been impossible. Fired 12 rounds single action and 12 rounds double action.

(d) 96 hours. Heavy rust over the entire weapon. Easy to unlock and could be cocked and fired with one hand. Old brass was extremely difficult to remove. New rounds were difficult to load due to chamber corrosion. Action was sticky and the trigger stuck back frequently. Cylinder would not automatically carry far enough for the cylinder stop to engage. Primers were stuck on the edge; however, no misfires were experienced. Fired 12 rounds single action and 12 rounds double action.

(6) For informational purposes a Chiefs Special 3" (steel) was immersed in the salt solution for five (5) minutes, removed, and cleaned as well as possible using only an oiler-driver (Appendix (A), Figure 17) and two (2) pistol cleaning patches. This weapon was cleaned only once; however, it showed no rust after four (4) days. Another Chiefs Special 3" (steel), which had only the normal amount of oil on it, was completely immersed in the salt solution for a total of nine (9) days. The weapon was functioning normally at the end of this period and could have been fired immediately without any danger.

(7) On the basis of the above tests it can be stated that weapons of the aluminum alloy used by Smith & Wesson are at least as corrosion resistant as steel weapons and may even be slightly less subject to malfunction due to corrosion than steel weapons. The explanation apparently lies in the fact that the products of aluminum corrosion are soft while those of steel are hard.

(8) During the progress of the above test the following observations were made:

(a) Most weapons can be made to fire immediately upon removal from the moist atmosphere of the salt fog cabinet; however, once the products of corrosion have had an opportunity to harden it becomes almost impossible to fire them.

(b) In some cases a weapon on which the rust has hardened can be loosened up again by soaking in water.

(c) The rusting process is retarded by total and continuous immersion in water.

(d) Complete protection for the weapon can be had by cleaning and oiling the weapon and placing it in a plastic pouch such as the "Rust-Pruf Pistol Pouch".

f. Endurance Tests:

(1) One weapon of each type was fired a minimum of 500 rounds single action and 500 rounds double action. The maximum rounds for any gun, each type, are contained in Appendix (C), Table #1.

(2) A Combat Masterpiece and a Military and Police 2" were fired 500 rounds single action and 500 rounds double action using tracer ammunition. The weapons were not cleaned for 5 days following completion of the tests. There was no corrosion or sign of undue wear noted.

(3) The following malfunctions were noted during the endurance tests:

(a) The ejector rod on two (2) of the twenty-one (21) S&W weapons fired during the course of the tests loosened sufficiently to lock the cylinder closed. The weapons could be easily and quickly fixed by tightening the ejector rod.

(b) Several of the Chiefs Special 2" and Hammerless models hung up at various times from undetermined causes.

(c) Of three (3) Colt Cobras fired, one was withdrawn for a broken latch pin at 736 rounds. Misfires were experienced frequently due to cylinder "carry by" previous to withdrawal. Another Cobra was fired a total of 2026 rounds. "Carry bys" were experienced frequently during the tests with this weapon also, especially in rapid double action firing (Appendix (A), Figure 48). The third Cobra has been fired a total of 228 rounds with no difficulties experienced.

(d) The cylinder stop on the Colt Police Positive 3" became sprung, which caused the cylinder to freeze frequently, and was replaced at 1187 rounds. No further difficulty was experienced. The cylinder stop mechanism appears to be the weakest feature of Colt weapons. The bearing surfaces of this mechanism are small and subject to wear which will cause the weapon to malfunction. All difficulties so far encountered in Colt weapons are traceable to this mechanism. The weapon otherwise seems to be a reliable and smoothly operating handgun.

(4) Two lots of ammunition, RA-5096 and RA-5127, were rejected as unsatisfactory during the course of the tests. The cause for rejection is as follows:

(a) Ruptured cases were frequent with both lots.

(b) One round of Lot RA-5096 separated 1/16" behind the base of the projectile. The separated portion of the case attempted to carry through the bore of the revolver. The resultant pressure blew up the weapon (Appendix (A), Figures 44-47).

(c) One round of Lot RA-5096 contained no propelling charge. The force of the primer drove the projectile into the bore. The following round bulged the barrel.

(d) Velocity variation of up to 200 ft/sec were noted.

(e) The velocity obtained was approximately 200 ft/sec lower than that obtained with standard velocity commercial ammunition.

(f) Tests conducted by the Air Force at Eglin Air Force Base on Lot RA-5096 (Project APG/CST/192-AC, Final Report dated 23 March 1953) showed that the velocity varied from 510 ft/sec at -65°F to 1135 ft/sec at +110°F for a spread of 625 ft/sec. The spread obtained with Peters RA-5200 under the same conditions was only 110 ft/sec.

g. Holster Test:

(1) The various holsters illustrated in Appendix (A), Figures 15-39 were issued to pilots and aircrewmen for several flights. The flights were in fighter, attack, torpedo, and transport type aircraft. After each pilot was thoroughly familiar with the particular holster he was carrying a new type was issued. Questionnaires were filled out for each type holster. Pilots preferences and general remarks are listed below.

(a) The Pocket Holster was first choice of six (6) of the eight (8) people who wore it.

(b) The Evaluators Ltd. shoulder holster was first choice of three (3) of the ten (10) people who wore it and second choice of three (3) more. It accounted for first or second choice of six (6) of the ten (10) who wore it.

(c) The Burns-Martin type holsters were second choice of two (2) of ten (10) people who wore them but were generally third choice.

(d) The Pocket Holster was first choice because of its flexibility of wearing position coupled with the fact that a maintenance kit was included in its design (oiler-driver, plastic pouch, compass). It was most comfortable when worn in a jacket pocket.

(e) The Evaluators Ltd. shoulder holster was second choice because it was comfortable and because it could be worn on the belt if desired. Several pilots suggested that a snap be provided so that the holster and shoulder strap could be snapped together to prevent the shoulder strap from coming out of the holster unless it was unsnapped.

(f) The primary objections to the Burns-Martin type holsters were that the weapons were difficult to re-insert after they were drawn, and that the shoulder straps on the shoulder models were uncomfortable.

(g) The preferred type of holster is the shoulder holster.

(h) Several pilots expressed fear of wearing a belt holster in an airplane because it might catch on something in evacuating the aircraft or the parachute harness.

(2) The following holster-gun combinations were subjected to a 14.3 g catapult shot. The acceleration was applied in such a direction as to tend to withdraw the weapon from the holster. A 5 g negative acceleration was applied when the catapult carriage was snubbed at the end of its travel.

(a) Evaluators Ltd. - Colt Cobra

(b) Pocket Holster - Colt Official Police 4"

(c) Burns-Martin "Lightning" with safety strap - Chiefs Special 2".

(d) Burns-Martin "Lightning" without safety strap - Military and Police 2".

(e) All holsters subjected to the above test retained the weapons with no apparent damage to holster or gun.

(3) The following remarks were made relative to methods of carrying ammunition:

(a) Cartridge loops on the shoulder strap are uncomfortable.

(b) The Patch type cartridge loops (Appendix (A), Figure 40) are comfortable and can be placed to suit the individual.

(c) A few extra rounds of ammunition should be carried loose in the flight suit pocket during cold weather since it is difficult to remove ammunition from cartridge loops with numb hands.

(d) All pilots were in favor of tracer ammunition. Most pilots knew personally of some pilot or aircrewman who was found at night after a ditching mainly because he had fired his tracers to show his position. In some instances his flashlight was not seen at all. Tracers can be seen for some distance even in daylight.

h. Hard Usage Test:

(1) One Chiefs Special 3" and one Colt Police Positive 3" were subjected to a hard usage test as follows. The weapons were first fired ten (10) groups in the machine rest so that any increase in group size could be detected. A five (5) pound steel weight was suspended from a twenty-five (25) inch arm. The weight was free swinging at the end of the arm. The weight was wrapped in several layers of friction tape to prevent marring the finish of the weapon. The test consisted of holding the weapon against the weight with the cylinder touching (weight hanging free) then raising the weight until the arm was horizontal and releasing it. The axis of the bore was perpendicular to the arc described by the weight. The weapons were held firmly with one hand around the grip and the other around the barrel and the elbows braced against the body. Two (2) blows were struck on each side of the cylinder. After the weapons were subjected to the above test they were again fired in the machine rest for ten (10) groups. This procedure was repeated once again with the results as listed below:

(a) Before Test Began

Weapon	Group (Avg. of 10)	Remarks
PP 3"	2-7/16 X 4-9/16	Undamaged
CS 3"	1-7/8 X 2	Undamaged

(b) Two blows each side:

Weapon	Group (Avg. of 10)	Remarks
PP 3"	2-9/16 X 5	No damage. Action normal
CS 3"	2-7/16 X 2	No damage. Action normal

(c) Four blows each side:

Weapon	Group (Avg. of 10)	Remarks
PP 3"	2-1/2 X 4-11/16	Yoke sprung slightly.
CS 3"	2-1/8 X 2-5/16	No damage apparent.

(2) Upon completion of the above tests the weapons were subjected to eight (8) additional blows using the same arrangement as described above. The results were as follows:

(a) The yoke of the Colt Police Positive was sprung approximately 1/32 of an inch away from the frame; however the action was smooth and easy and the weapon was fired with no difficulty.

(b) The Chiefs Special 3" showed no apparent damage but the action was slightly stiffer than normal.

(3) Upon completion of the above tests the weapons were held firmly by the grip and a hard downward glancing blow was struck against a piece of soft 2" X 4" wood. The point of impact was the ejector rod. The blow was intended to simulate one that might be struck in hand to hand fighting. The results were as follows:

(a) The ejector rod of the Police Positive 3" was bent approximately 3/16 of an inch so that it bore against the side of the barrel. Only four (4) rounds could be fired without the ejector rod bearing against the barrel and jamming the action. If the blow had been a glancing right blow instead of a glancing left blow no rounds could have been fired. The brass could not be ejected but had to be picked out one at a time with the fingernails. The ejector rod was placed against the edge of a table and bent back so that the weapon would fire all chambers and would eject the rounds. It could not be bent back by hand.

(b) The ejector rod on the Chiefs Special 3" was bent very slightly. The ejector rod could be worked by hand; however, it was very stiff. After it was depressed its full length several times it worked freely.

(4) Upon completion of the foregoing tests an M & P 2" Aluminum was subjected to twelve (12) blows on each side using the same method as described in (1) above. The weapon was not checked accuracy-wise either before or after the test. The test was intended to check the strength of the cylinder lock mechanism and suspension. Upon conclusion of the test there were no indications of weakness apparent by the closest of visual inspection. The weapon functioned normally in every respect.

Test of Survival Weapons

1. General Comments:

(1) The following remarks are based on comments and observations made during the course of accuracy and endurance tests and on comments received on questionnaires.

(a) All shooters desired either target grips or Magna type grips with grip adapters. The majority preferred Magna type grips with grip adapter.

(b) It was impossible to fire rapid fire with the standard grip or with Mershon rubber grips when the hands or gloves were covered with hydraulic oil. The "Magna" grips and grip adapter were much better. Smith & Wesson target grips were good but Colt target grips were best of all due to their deep and extensive checkering.

(c) If adapted for service use any target grips accepted should be redesigned to facilitate rapid and easy ejection.

(d) All shooters commented favorably on the wide spur type of hammer.

(e) All shooters commented favorably on the balance of the weapons with 3" barrels.

(f) One front sight became unsoldered and popped off during firing (Colt) when the barrel was bulged by a defective round. Any service weapon should have the front sight included as a part of the barrel forging.

(g) Most pilots wanted a fixed rear sight to prevent sight damage.

(h) The rear sight notch on most of the weapons with fixed sights could be improved by widening and deepening.

(i) The preferred cylinder latch is the large S & W type with the Colt type next and the S & W flat type next. The shooters were unaminous in their dislike of the S & W flat type.

(j) Occasional malfunctions were caused during cold weather firing by the pilots summer weight gloves getting caught between the frame and the notch on the trigger which is exposed when the trigger of the S & W weapons is depressed. This difficulty was not experienced with Colt weapons.

(k) Many shooters recommended that the size of the trigger guard be enlarged.

(l) The following table is a breakdown of nine pilots' and aircrewmens' preferences. All of them had carried and fired the weapons.

PREFERENCE RATING

Weapon	SHOOTER* B	C	E	F	G	H	I	J	K	Total
Combat Masterpiece	1	2	1	2	1	3	2	4	3	19
M & P 3" A	6	6	3	1	3	1	3	1	1	25
Victory	3	1	5	6	2	4	1	3	2,	27
M & P 3" S	5	3	6	7	6	5	5	2	4	43
OP 3"	2	4	7	3	7	7	6	5	5	46
PP 3"	4	5	2	8	5	6	4	7	8	49
Chiefs Special 3"	7	7	4	4	4	2	7	6	10	51
M & P 2" SB	9	8	8	5	8	8	8	8	7	69
M & P 2" RB	10	9	9	9	9	10	9	9	6	80
Chiefs Special 2"	8	10	10	10	10	9	10	11	9	87
Cobra	11	11	11	11	11	11	11	10	11	98
Hammerless	12	12	12	12	12	12	12	12	12	108

* Two shooters were not available for comment (See Table #3).

(m) In view of the many difficulties experienced with ammunition it is assumed that the majority of the present stocks are old and will be declared unserviceable. It is recommended that consideration be given to mid-range, or wadcutter type, ammunition when future purchases are made for training purposes. Mid-range loads are more accurate and less expensive.

PART D

CONCLUSIONS AND RECOMMENDATIONS

10. a. On the basis of the foregoing results it is concluded that:

(1) Aluminum weapons of the S & W alloy, M & P frame size show satisfactory strength and corrosion resistant qualities.

(2) The flat cylinder latches, such as are found on the S & W aluminum models, are unsatisfactory.

(3) Low temperature lubricants are necessary during cold weather operations.

(4) The ideal weapon would have a larger trigger guard than is available on standard weapons.

(5) Suitable corrosion protection can be obtained by the use of an oiler-driver and plastic pouch.

(6) Tracer ammunition is not unduly corrosive and is acceptably accurate considering its use.

(7) Weapons having 3" barrels have suitable penetration, accuracy, and balance.

(8) Lightweight weapons having 2" barrels are not suitably accurate.

(9) "Magna" type grips with grip adapter improve the feel of a weapon and make cocking during rapid fire much easier.

(10) The "Magna" type grip, improved by additional checkering near the backstrap, is the best compromise between target grips and standard grips.

(11) The present grips on the Victory are unsuitable as it is impossible to fire the weapon with even passable accuracy if the hands or gloves are coated with oil. There also exists the possiblility of dropping or fumbling the weapon if the hands or gloves are oily.

(12) The wide spur hammer facilitates easy cocking.

(13) The front sight should be part of the barrel forging.

(14) Adjustable sights are not suitable for service use.

(15) The notch in the trigger of the S & W weapons, which is exposed when the trigger is depressed, is undesirable.

(16) A locking device should be installed on the ejector rod of S & W weapons.

(17) More than 90% of the shooters preferred a heavy gun to the aluminum weapons, with the exception of the M & P 3".

(18) S & W weapons of comparable frame size are slightly more reliable than Colt weapons for the following reasons:

(a) All bearing surfaces are full width and are not subject to springing or bending.

(b) The ejector rod is protected and is of heavier construction.

(c) The cylinder stop is designed so that carry-by is highly improbable.

(19) The Colt weapon would be acceptable if the cylinder lock mechanism were redesigned to prevent carry-by and the ejector rod were either increased in size and strength or protected as it is in the heavy frame (.357, 38-44, .45) S & W weapons.

(20) Considering accuracy, penetration, pilots preferences, reliability, and the foregoing remarks in this section the S & W Military and Police 3" Aluminum with Magna grips, grip adapter, and wide spur hammer is the best weapon for the purpose tested.

(21) The "Pocket Holster" is superior to the other types tested.

(22) The "Patch" type ammunition carrier is the best method of carrying ammunition (Appendix (A), Figure 40).

b. It is recommended that:

(1) If the Victory is retained, modified Magna grips and grip adapters be issued for the weapons.

(2) If future purchases of the Victory are made, it be purchased with modified (addition checkering) Magna grips, grip adapter (of the Mershon type), and wide spur hammer.

(3) If the S & W Military and Police 3" Aluminum is adopted it have the following features:

(a) Modified Magna grips.

(b) Fixed rear sight.

(c) Wide spur hammer.

(d) Butt seivel.

(e) Front sight a part of the barrel forging.

(f) A trigger which eliminates the notch mentioned before.

(g) Steel cylinder.

(h) Large type cylinder latch.

(i) Barring prohibitive cost, an enlarged trigger guard.

(j) Ejector rod locking device.

(4) The "Pocket Holster" be sent to the Fleet for evaluation.

(5) The Patch type ammunition carrier be adopted.

(6) Grip adapters in various sizes, of the Mershon type, be placed in the supply system.

Test of Survival Weapons

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RESTRICTED

NPG REPORT NO. 1163

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

Final Report

on

Test of Survival Weapons

Project No.: NPG -Re5-1-17-53

Date: AUG 26 1953

No. of Pages: 28

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NP9-62576 30 June 1953 RESTRICTED
SECURITY INFORMATION

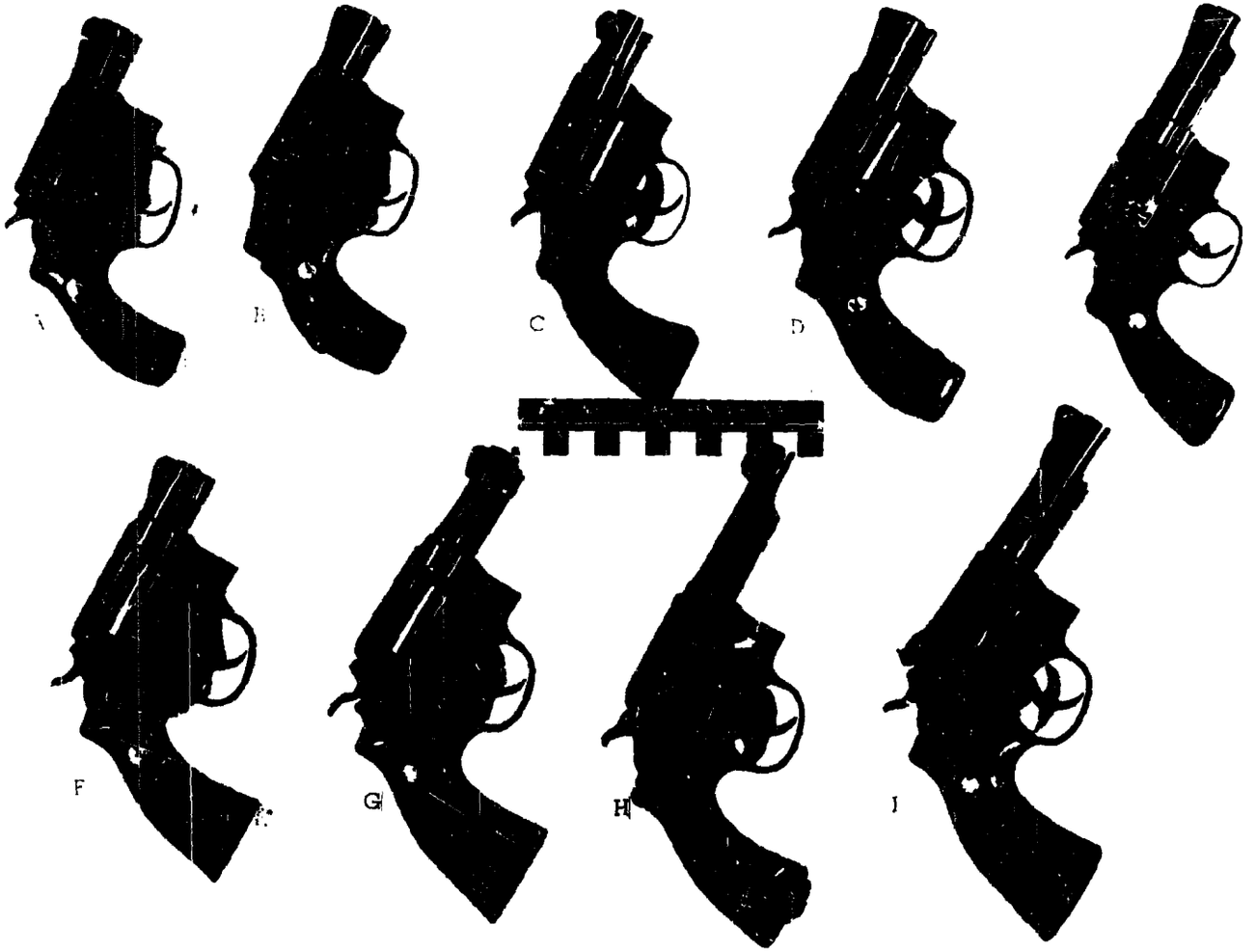
S&W Military and Police 38 Aluminum. This weapon was determined to be the most suitable replacement for the present service revolver.

Figure 1

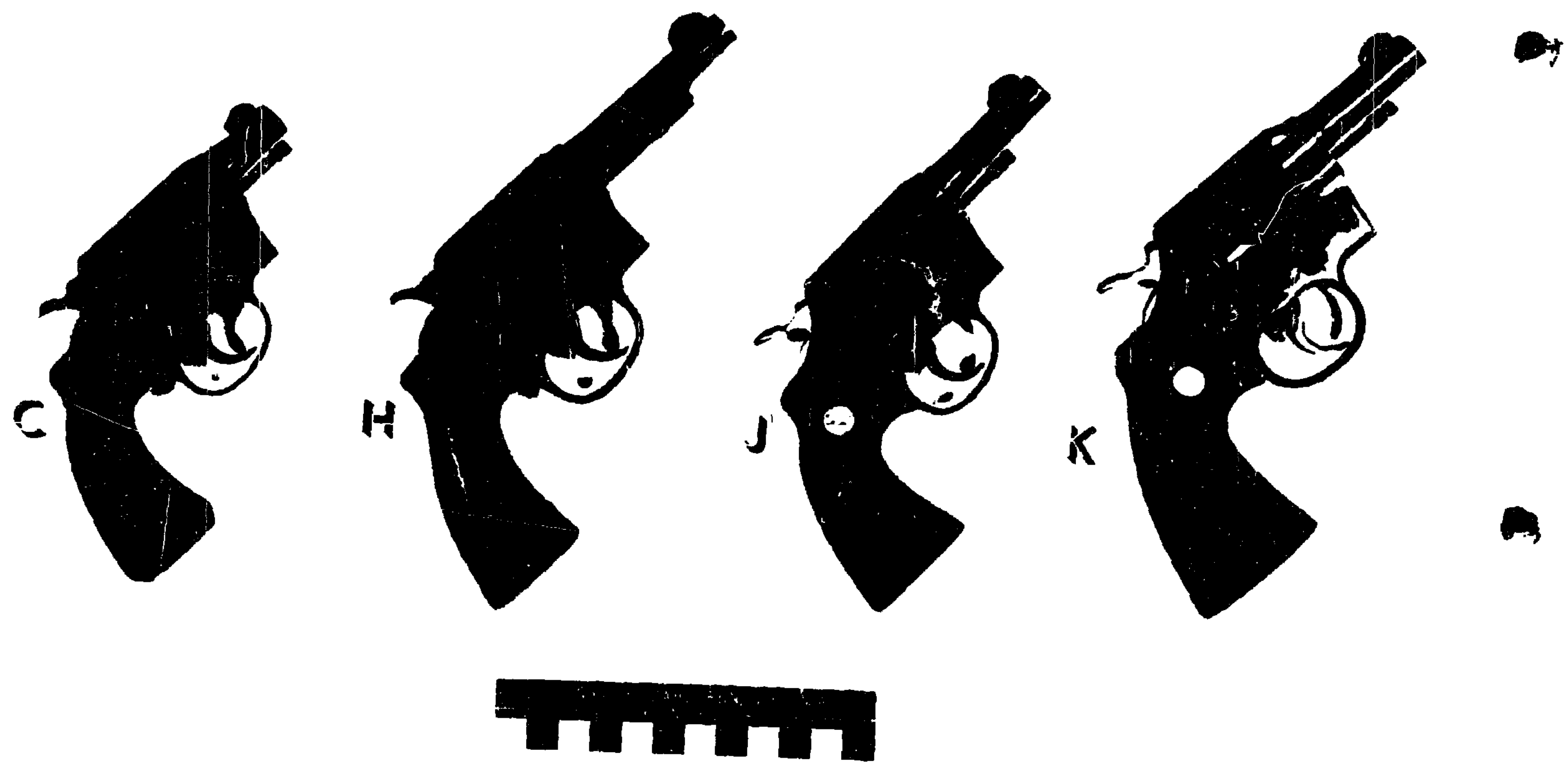
NP9-62602

RESTRICTED
SECURITY INFORMATION

Illustrating the differences in size of the weapon under test.
Figure 2



PT-4-FIC [illegible] 1[illegible] June [illegible] RESTRICTED
Illustrating [illegible] SECURITY INFORMATION
is in service [illegible] difference in size [illegible] Colt weapons and the Victory, which [illegible]
Figure [illegible]



NP9-62604
Smith & Wesson aluminum frame Chiefs Special 2" .38 Special.
Figure 4

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A

U.S.N.P.G. DAHLGREN, VIRGINIA
3 INCHES

NP9-62605
Smith & Wesson aluminum frame "Aircrewman" .38 Special.
Figure 5

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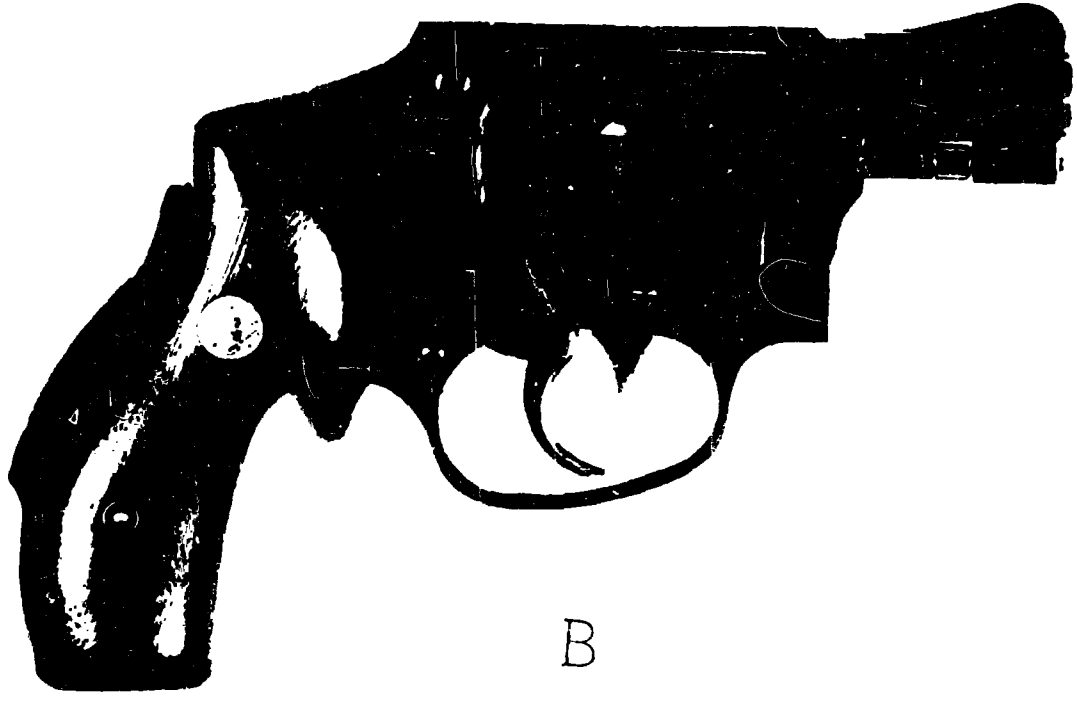
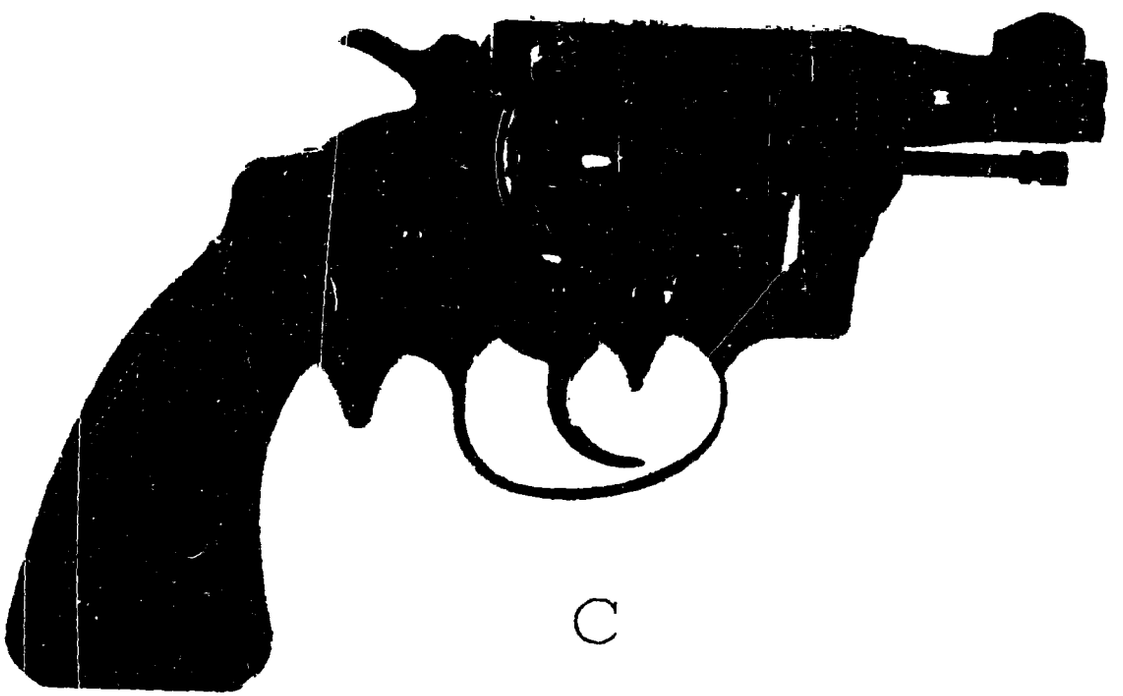


B

NP9-62608
Colt "Cobra" aluminum frame .38 Special with 2" barrel.
Figure 6

RESTRICTED
SECURITY INFORMATION



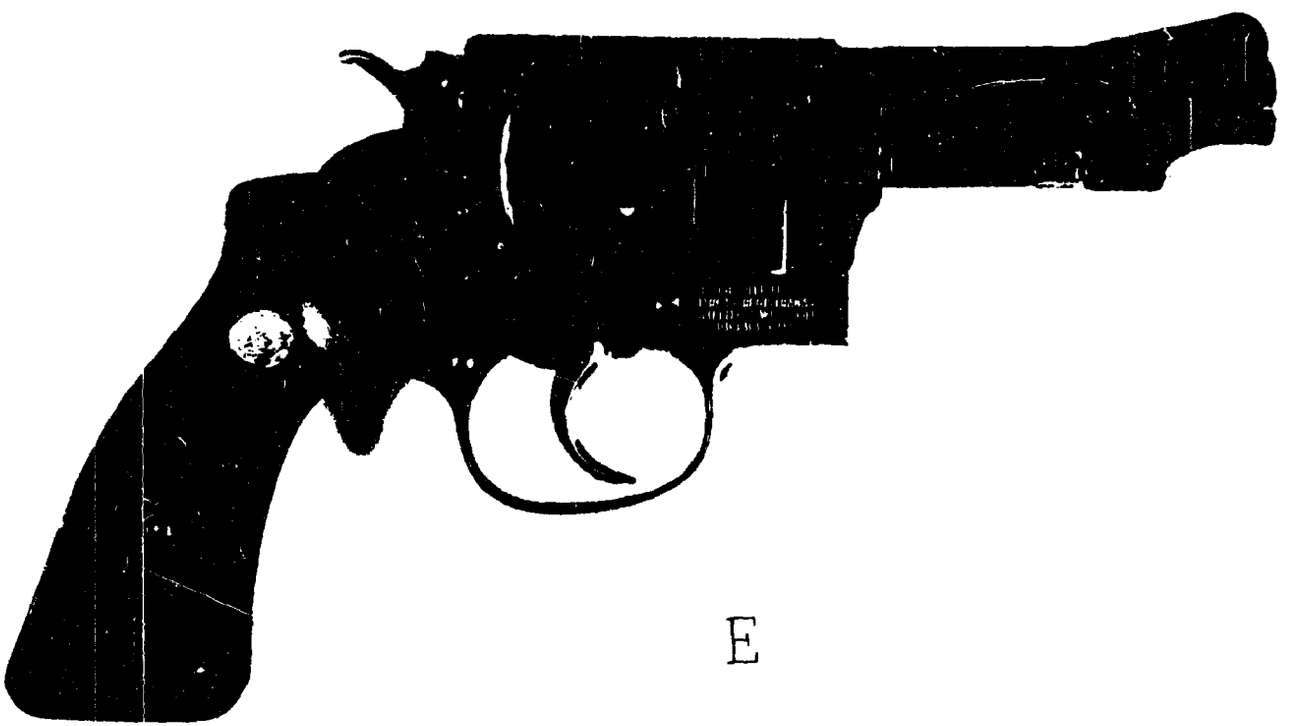
C

NP9-62603
Smith & Wesson aluminum frame round butt Military and Police Model .38 Special.
Figure 7

RESTRICTED
SECURITY INFORMATION

NP9-62610
Smith & Wesson Chiefs Special 3" all steel .38 Special.
Figure 8

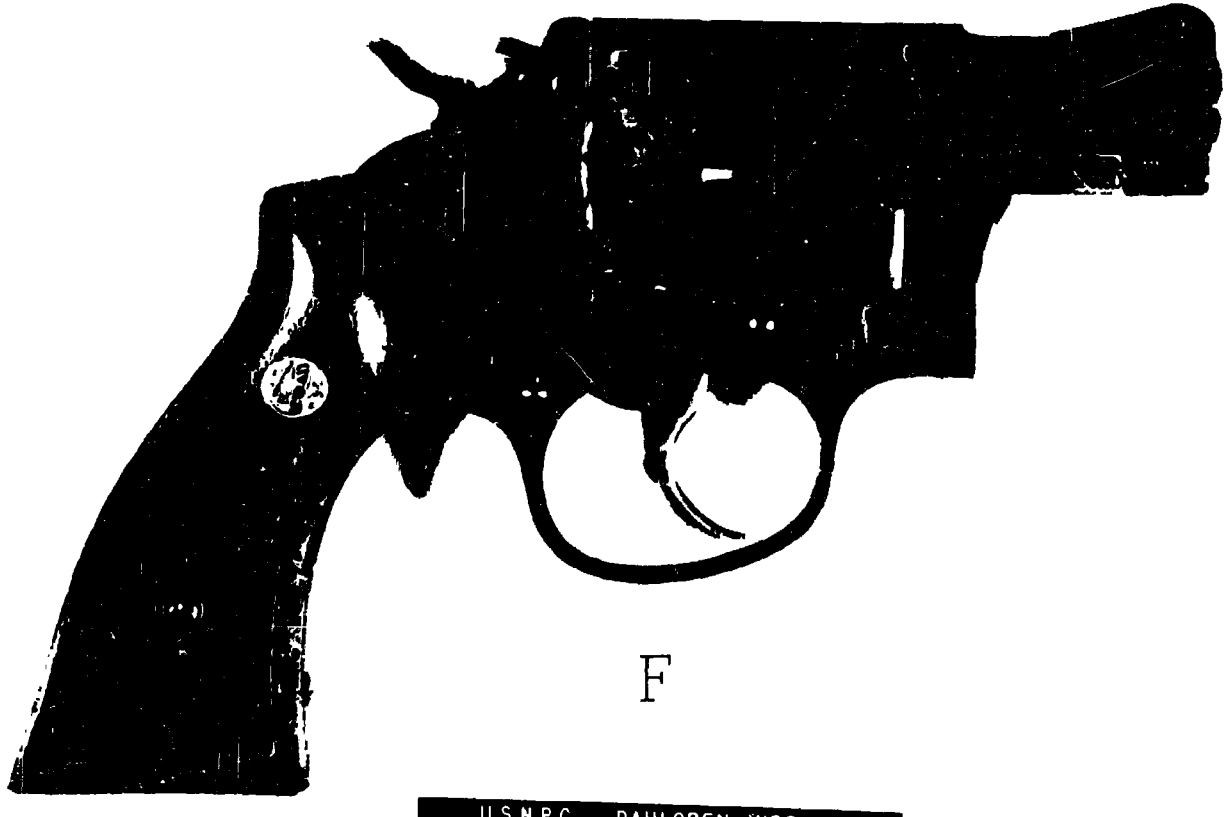
RESTRICTED
SECURITY INFORMATION



E

NP9-62609
Smith & Wesson aluminum frame Military and Police Model 2" .38 Special with square butt.
Figure 9

RESTRICTED
SECURITY INFORMATION



NP9-62606

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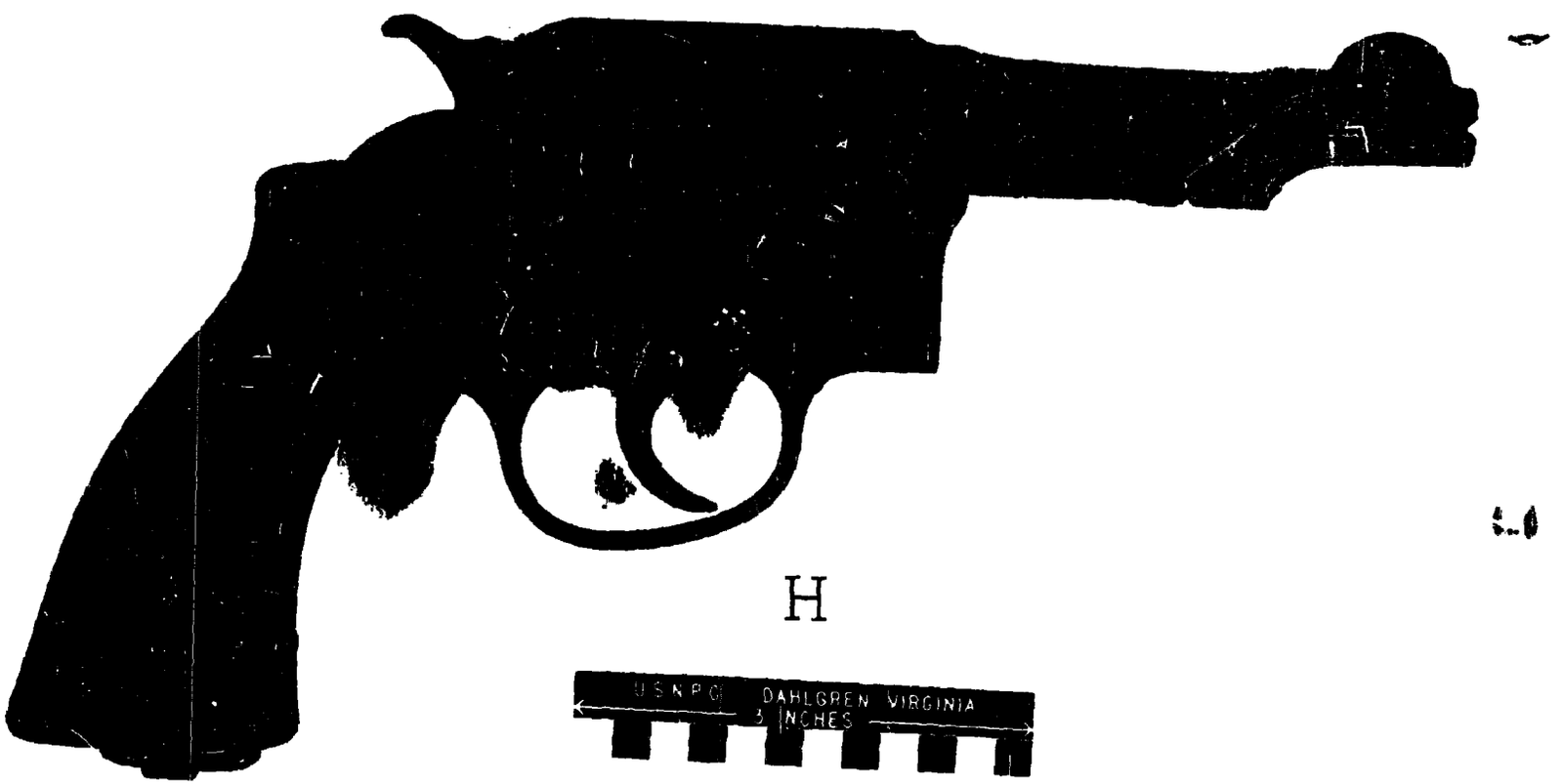
SECURITY INFORMATION

Smith & Wesson Military and Police Model with wide spur hammer, target grips, and 3" barrel. Caliber is .38 Special. All steel and aluminum frame models are identical in appearance.

Figure 10

NP9-62611
Smith & Wesson "Victory" Model (all steel) .38 Special.
Figure 11

RESTRICTED
SECURITY INFORMATION



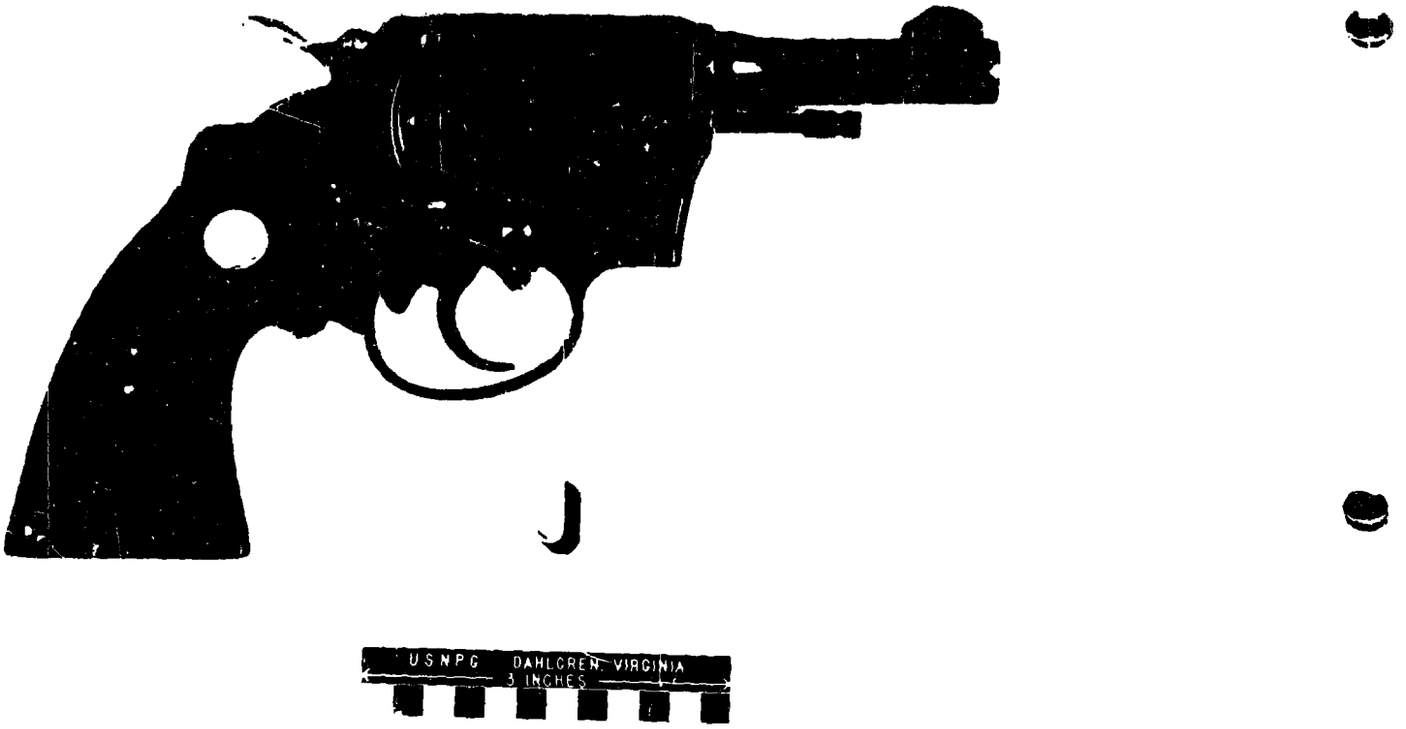
NP9-62607
Smith & Wesson Combat Masterpiece (all steel) .38 Special.
Figure 12

RESTRICTED
SECURITY INFORMATION

NP9-63511 18 June 1953 RESTRICTED SECURITY INFORMATION

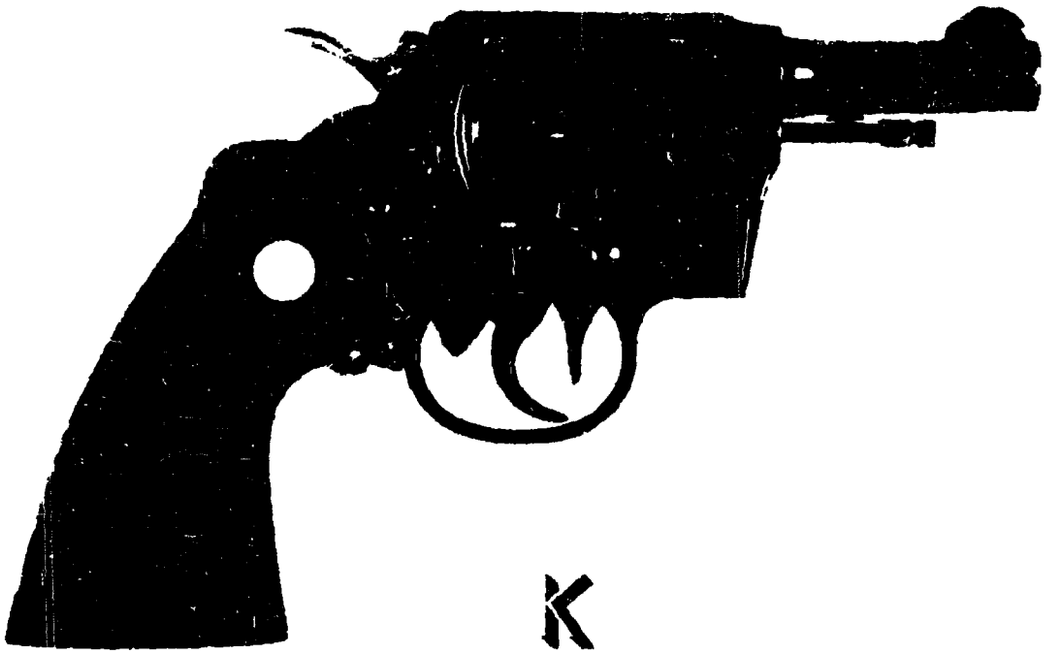
Colt Police Positive with 3" barrel, wide spur hammer, and target grips (all steel). Caliber .38.

Figure 13



NP9-63512 18 June 1953
Colt Offical Police with 3" barrel, wide spur hammer, and target grips (all steel).
Caliber is .38 Special.

Figure 14



NP9-62264
"Pocket" type holster with detachable shoulder strap for use with [illegible] suit.
Figure 25

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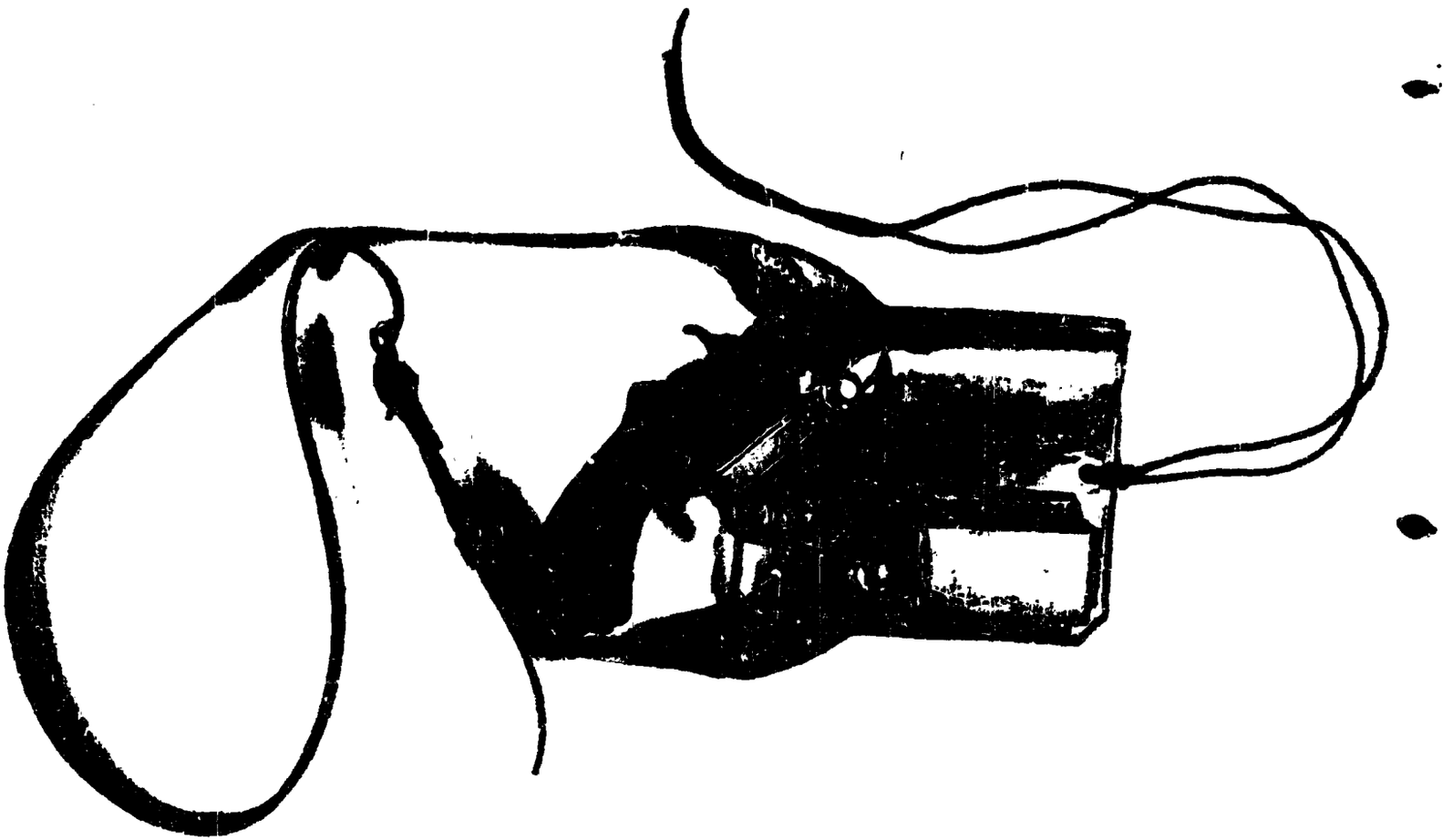
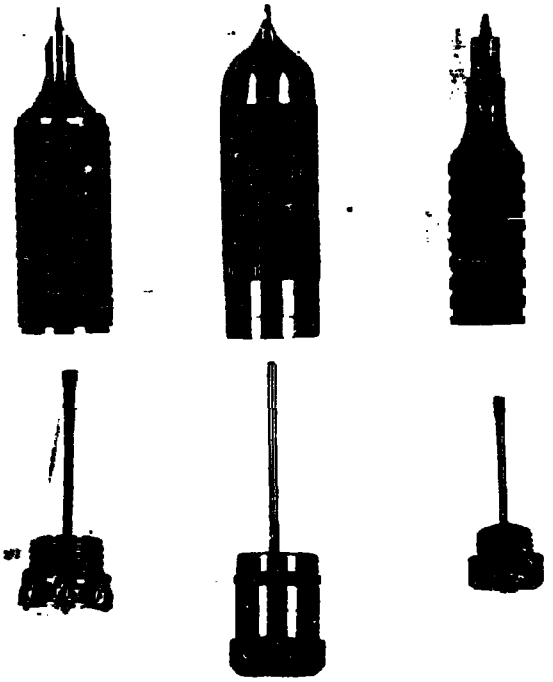
SECURITY INFORMATION





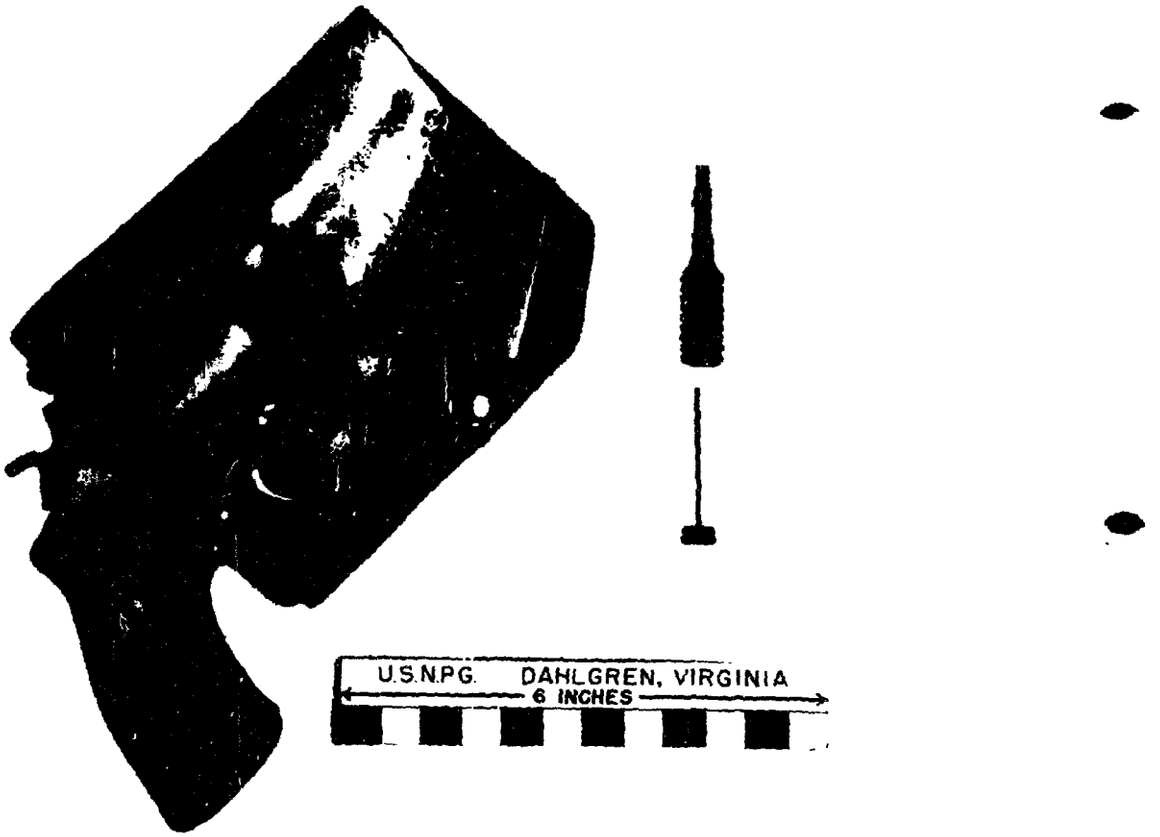
NP9-63498 11 June 1953 RESTRICTED SECURITY INFORMATION

Various modifications of the oil-driver with the first modification on the right.

Figure 17

NP9-51674
"Pocket" type holster with combination oil can + screw driver which fits into pocket on holster. Revolver is a S&W .357 Magnum with 3-1/2" barrel.
Figure 18

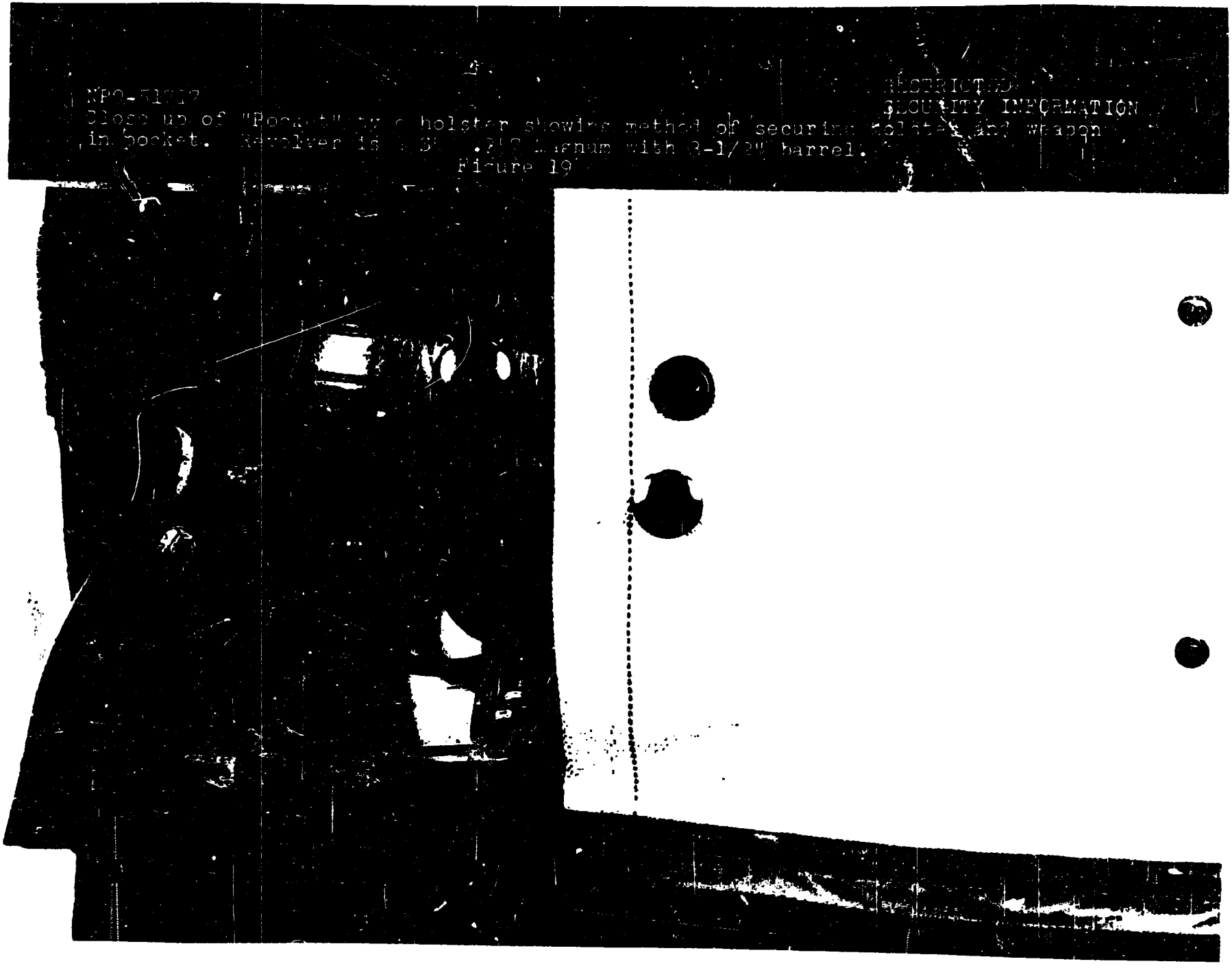
RESTRICTED
SECURITY INFORMATION

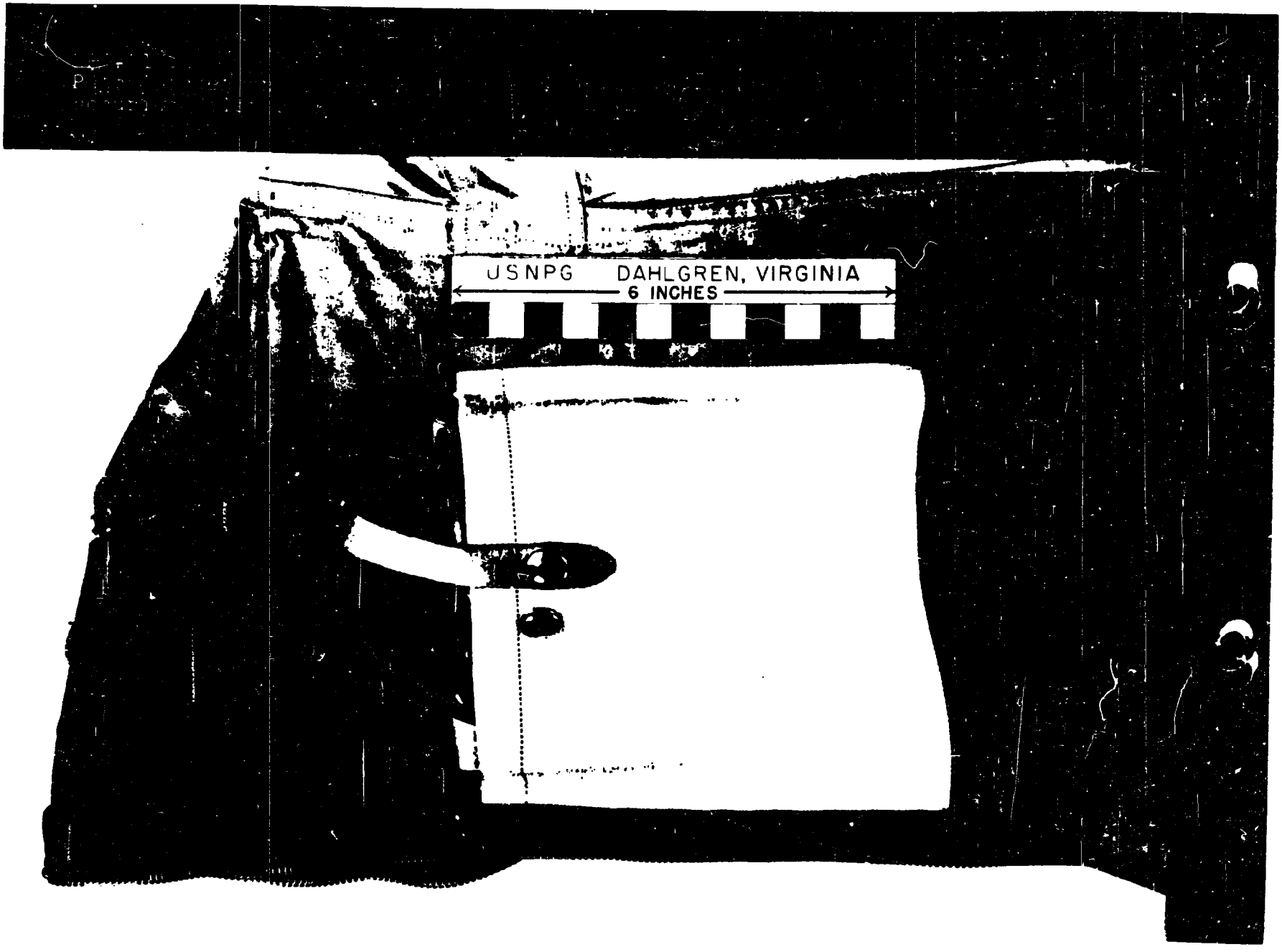


NPO-51717
Close up of "Pocket" type holster showing method of securing holster and weapon in pocket. Revolver is a S&W .357 Magnum with 3-1/2" barrel.

RESTRICTED
SECURITY INFORMATION

Figure 19




USNPG DAHLGREN, VIRGINIA
6 INCHES

MP9-7171?

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SECURITY INFORMATION

Illustrating position of "Pocket" type holster on pilots coveralls. Placement of pocket or holster is determined by individual pilot for most comfortable fit. Revolver is a [illegible] .357 Magnum with 2-1/2" barrel.

Figure 21

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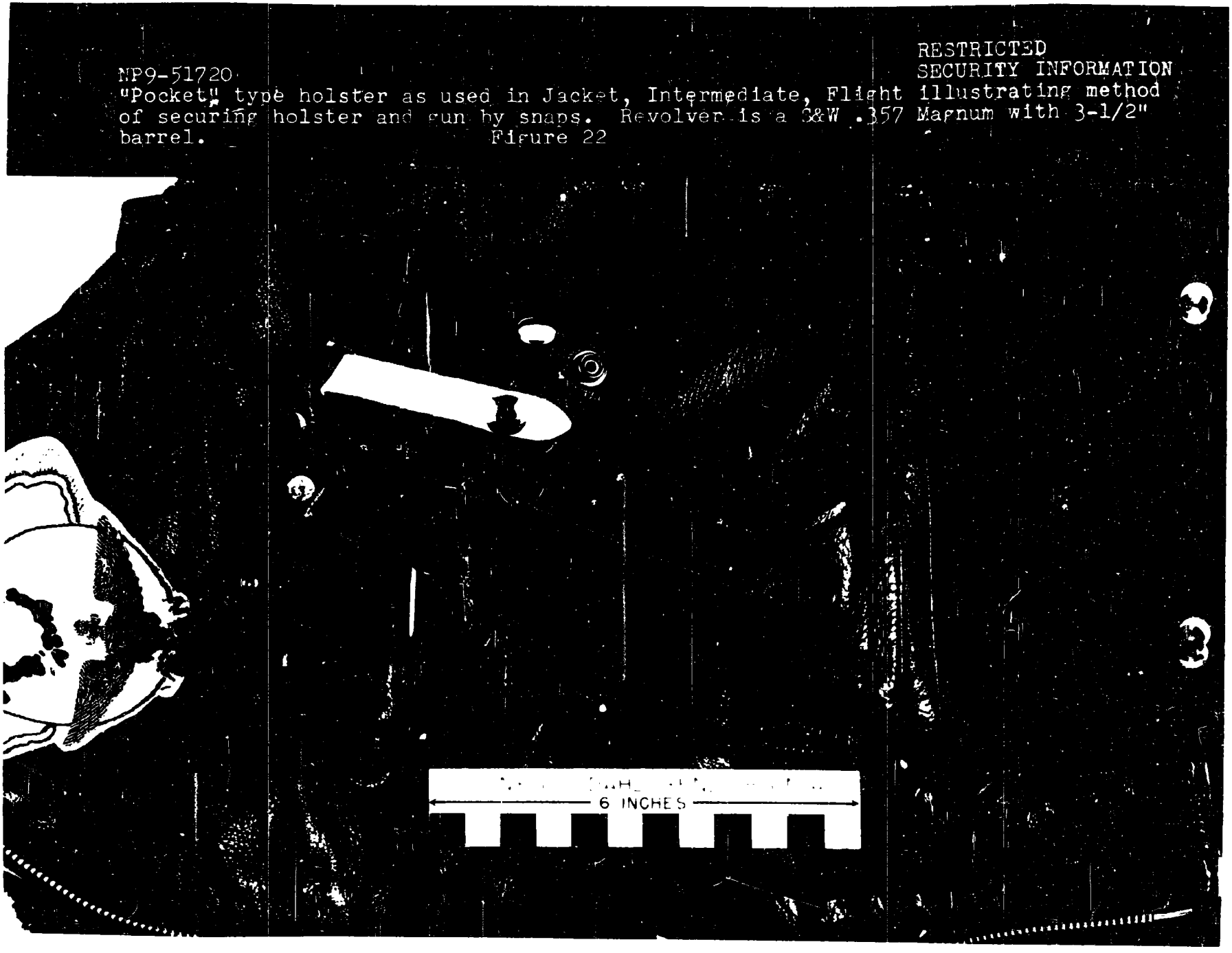
NP9-51720
"Pocket" type holster as used in Jacket, Intermediate, Flight illustrating method of securing holster and gun by snaps. Revolver is a S&W .357 Magnum with 3-1/2" barrel.
Figure 22



XP-51A2
Illustrating position of revolver in "Pocket" type holster in Jacket, Interceptor, Flight with life jacket on. Weapon does not interfere with wearing of the life jacket.

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NP9-62589.
"Pocket" type holster fitted with shoulder strap as worn with Mk 3 exposure suit. This position keeps gun under arm.

RESTRICTED
SECURITY INFORMATION

NP9-62590
Alternate method of wearing "Pocket" type holster fitted with shoulder strap. This position keeps weapon out from under arm.
Figure 25

RESTRICTED
SECURITY INFORMATION

NP9-62565
"Pocket" type shoulder holster fitted with shoulder strap as worn under life jacket. Figure 26

NP9-51671
Burns-Martin front draw belt holster. Has 2" belt loop and thong for attachment to web belt. Revolver is a S&W Combat Masterpiece (.38 Special) with 4" barrel.
Figure 27

RESTRICTED
SECURITY INFORMATION

NP9-62566
Illustrating one (1) method of wearing a belt type holster. This position slightly more comfortable than over trousers belt.

Figure 28

NP9-62567
Illustrating one (1) method of wearing a belt type holster. This position slightly more comfortable than over trousers belt.
Figure 29

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SECURITY INFORMATION

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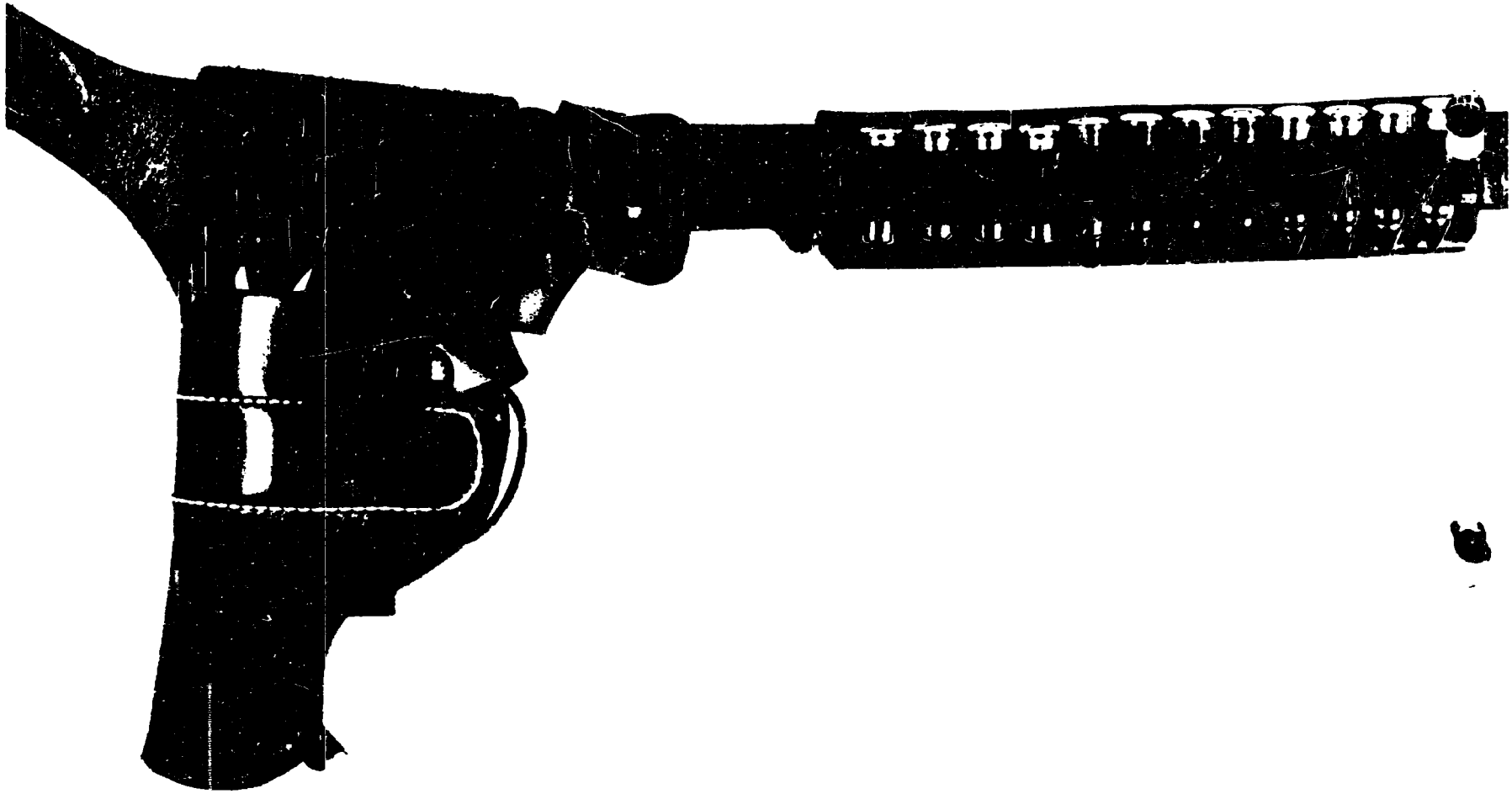
SECURITY INFORMATION

NP9-51669
Combination shoulder - belt holster with cartridge loops. Revolver is a Colt Cobra with 2" barrel. Figure 30



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SECURITY INFORMATION

NP9-62257
Illustrating position of Evaluators Ltd. combination shoulder-belt holster for Colt Cobra .38 Special revolver after putting on life jacket.

Figure 32

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SECURITY INFORMATION

NP9-51670
Burns-Martin "Lightning" combination shoulder - belt holster. Revolver is a S&W Chiefs Special with 2" barrel.

NP9-62260

RESTRICTED
SECURITY INFORMATION

Illustrating position of Burns-Martin "Lightning" shoulder holster for S&W Military and Police 2" .38 Special revolver before putting on life jacket and parachute harness.

Figure 3

RESTRICTED
SECURITY INFORMATION

NP9-62559
Illustrating position of Burns-Martin "Lightning" shoulder holster for S&W Military and Policc 2" .38 Special Revolver after putting on life jacket.

Figure 35

RESTRICTED
SECURITY INFORMATION

NP9-62256
Illustrating position of Burns-Martin "Lightning" shoulder holster for S&W Military and Police 2" .38 Special revolver for left hand draw while wearing life jacket and parachute harness.
Figure 2

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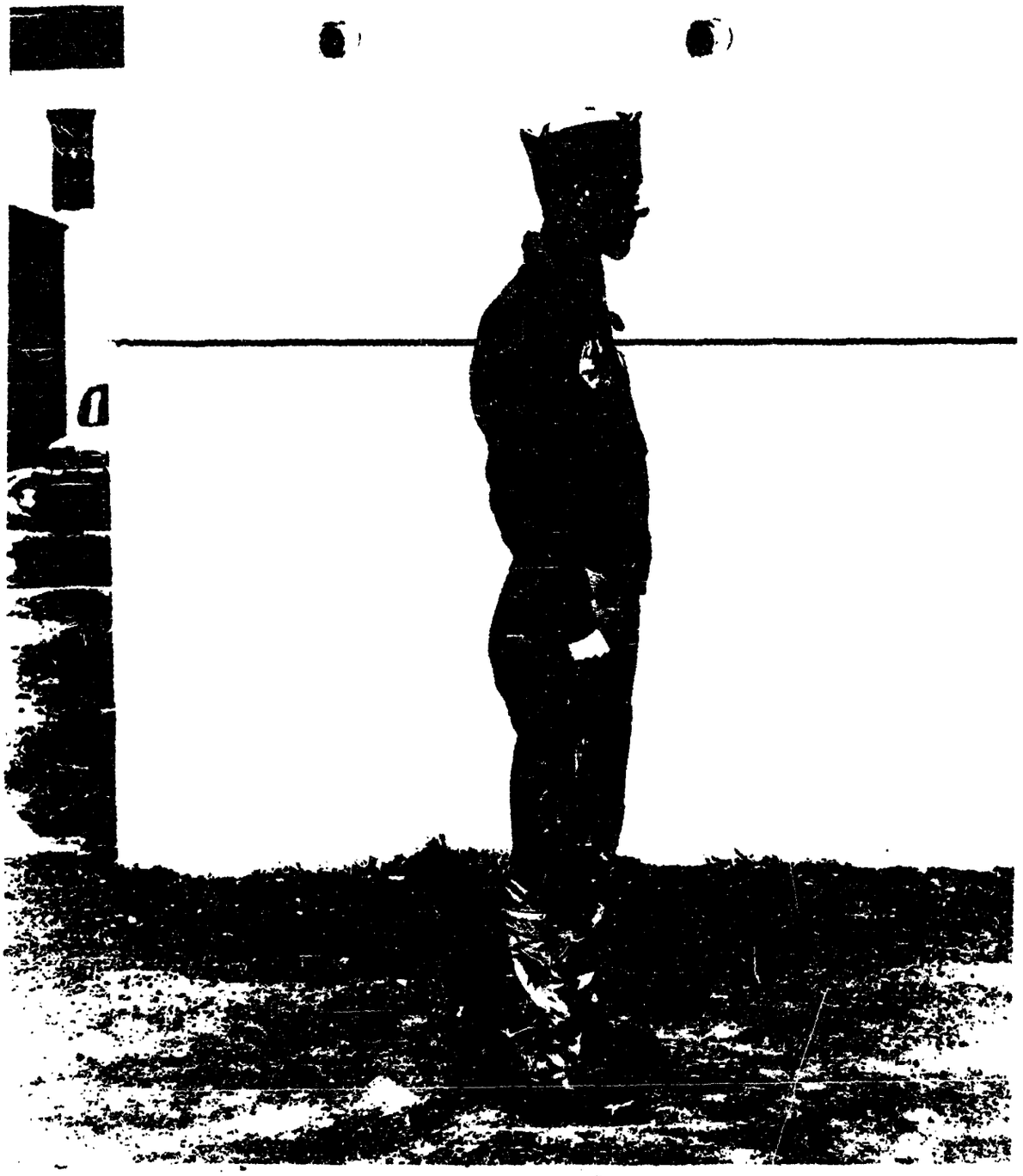
SECURITY INFORMATION

NPO-62561
Illustrating position of Burns-Martin "Patch" type holster as preferred by one ~~(1)~~ pilot. Holster may be removed from patch and worn as a belt holster.

Figure 38



RESTRICTED
SECURITY INFORMATION

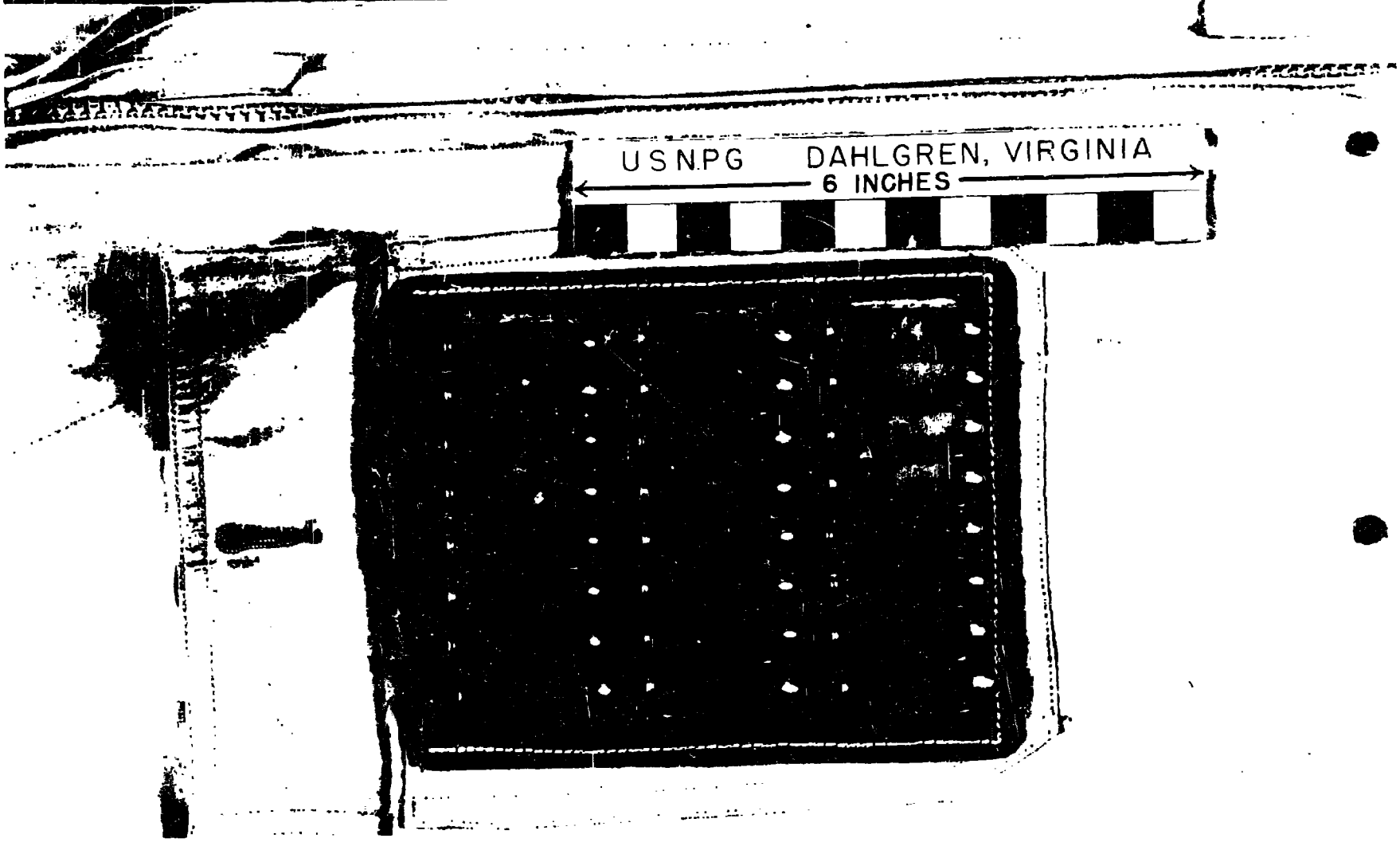
NP9-62560
Illustrating position of Burns-Martin "Patch" type holster as preferred by one (1) pilot. Holster may be removed from patch and worn as a belt holster.

Figure 39

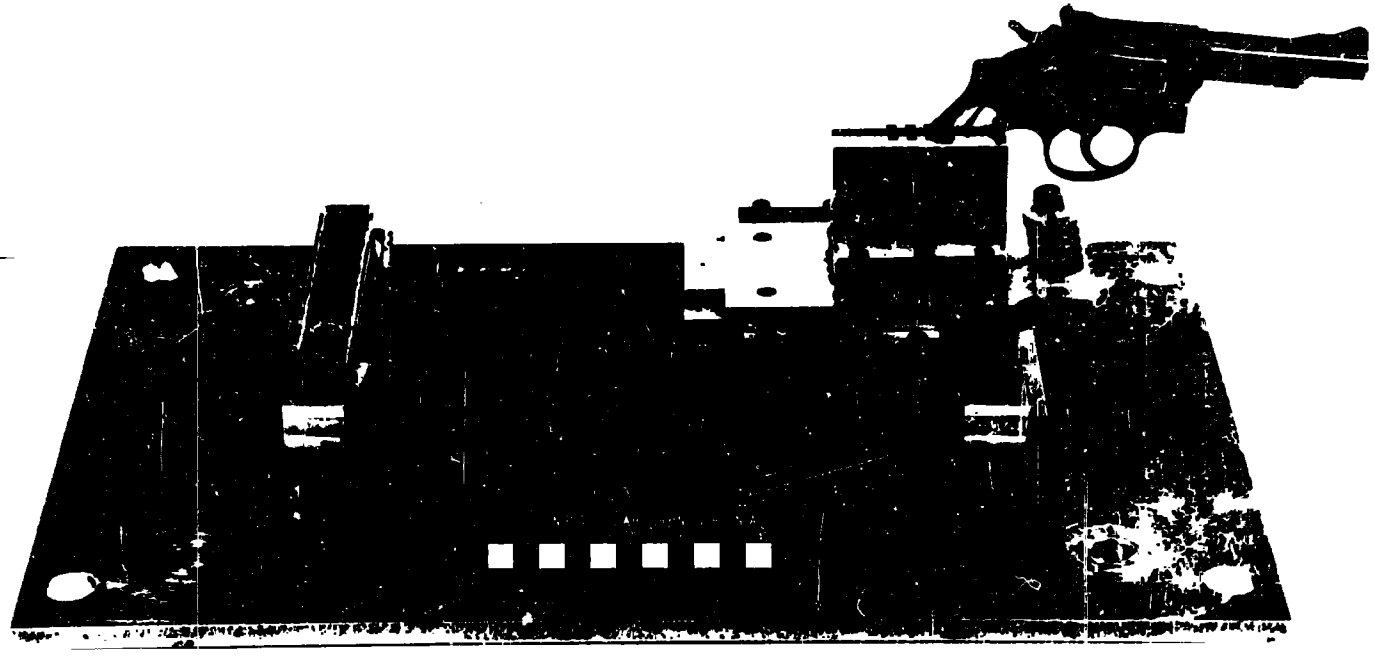
RESTRICTED
SECURITY INFORMATION

NP9-51863
Patch type cartridge holder sewn over breast pocket of Suit, Flying, Summer. Patch will hold 24 rounds of caliber .38 special. Pocket is still usable for papers or other thin objects.

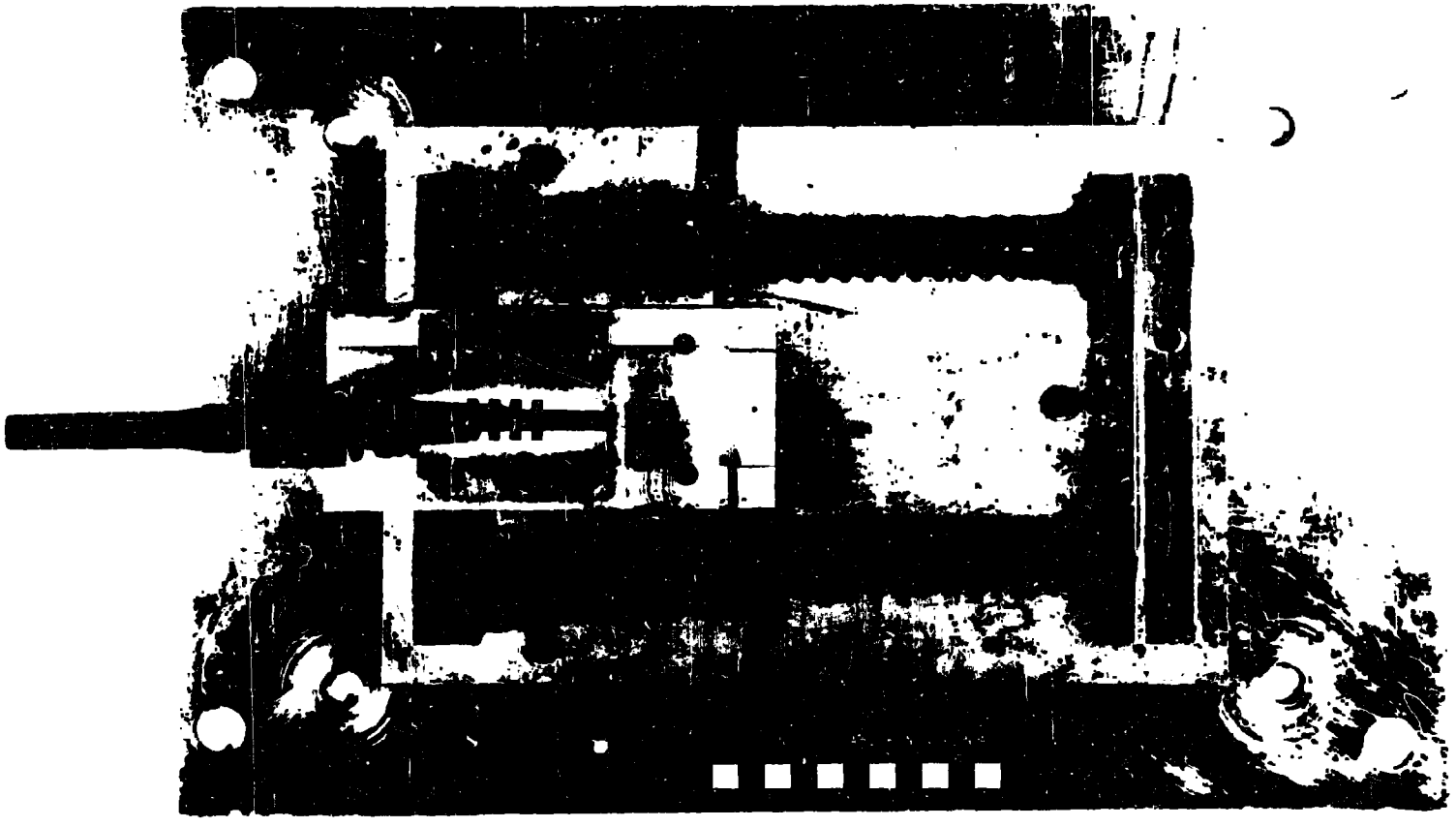
Figure 40



NP9-62563
Revolver Machine Rest used for accuracy tests.
Figure 41



MP9-62564 18 June 1953
Revolver Machine Rest used for accuracy tests.
Figure 42



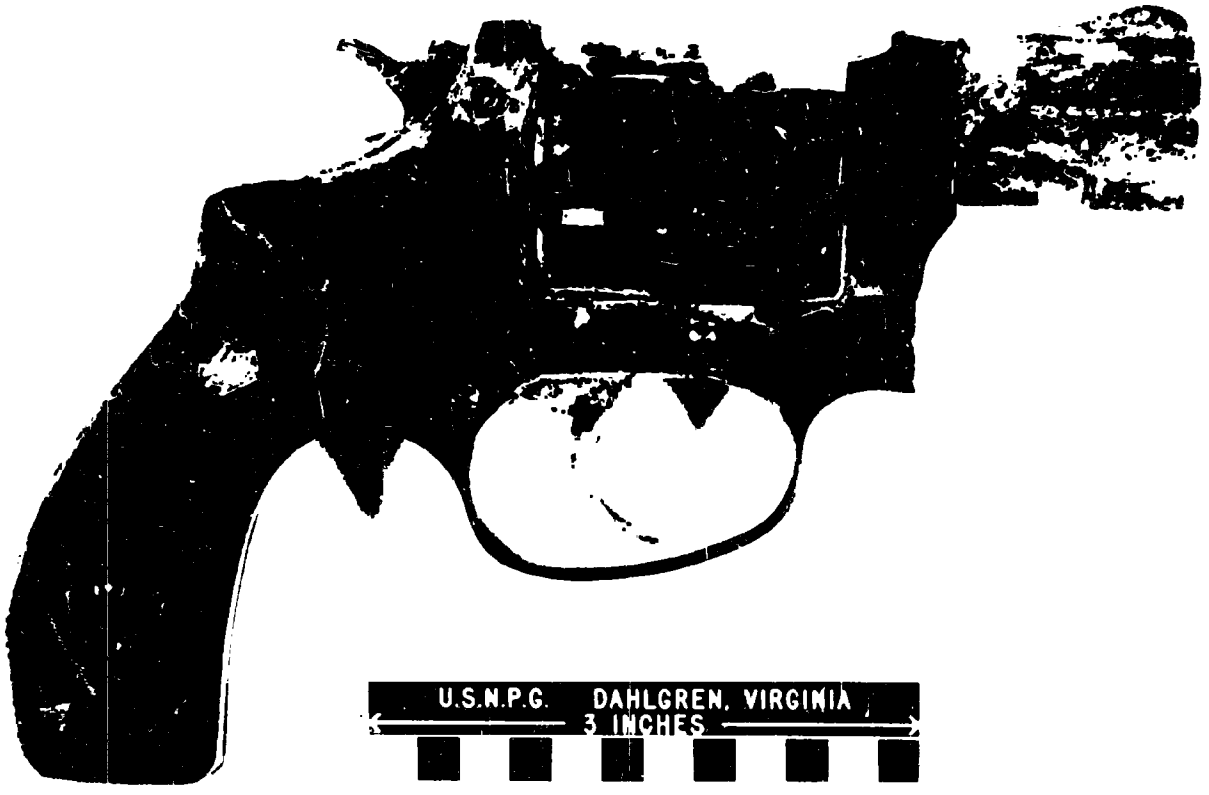
National Silhouette Target

NP9-51835

Silhouette target for timed fire accuracy tests. Hits inside taped area were considered kills. Hits outside taped area but on the silhouette were considered wounds.

Figure 42

NP9-62599
S&W Chiefs Special. Weapon has been in a 20% salt fog at 100°F for 72 hours. Rupture occurred on the fourth round fired. Note case still in chamber.
Figure 44



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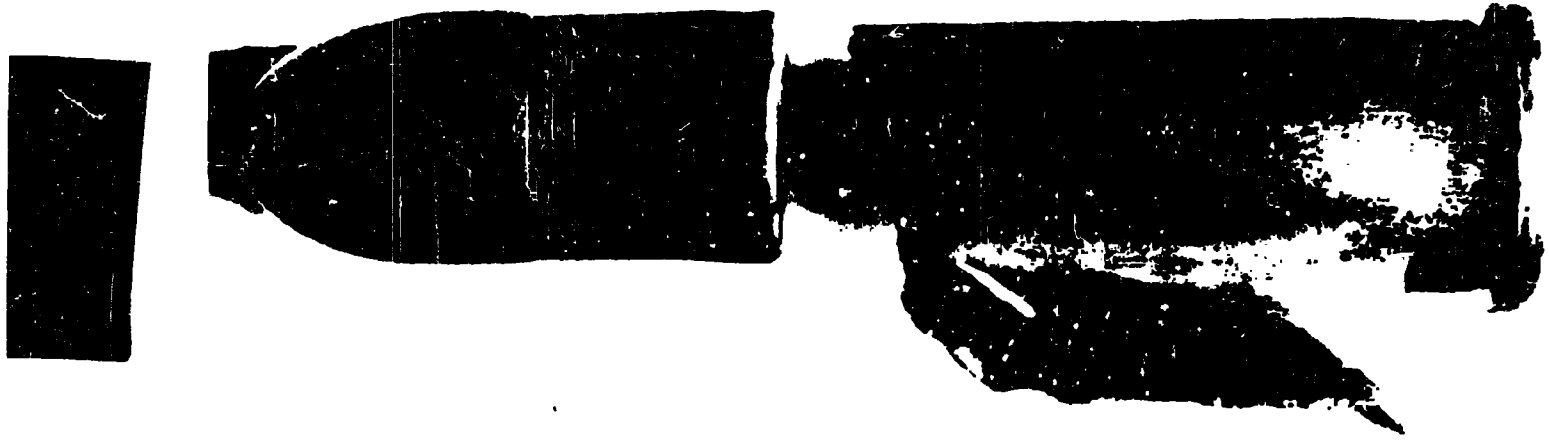
SECURITY INFORMATION

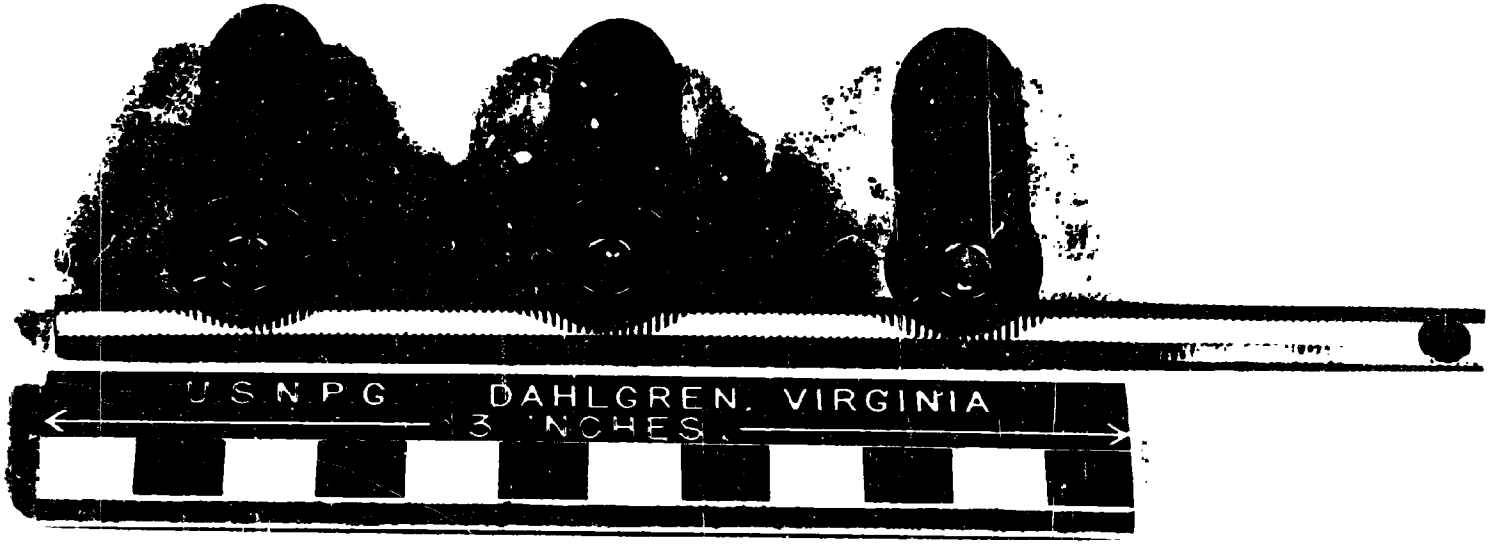
NP9-62600
S&W Chiefs Special. Weapon has been in a 20% salt fog at 100°F for 72 hours. Rupture occurred on the fourth round fired. Note case still in chamber.
Figure 45

Figure 46

Figure 47



NP9-62601
Three typical misfires obtained with the Colt "Cobra" in rapid double action firing.
Figure 48



Test of Survival Weapons

MOVIES UNDER SEPARATE COVER TO BUORD Re5e

TABLE 1

GUN	S&W COMBAT MASTERPIECE	S&W VICTORY	S&W M&P 3" STEEL	S&W M&P ALUMINUM	S&W CHIEFS SPECIAL 3"	COLT OFFICIAL POLICE 3"	COLT POLICE POSITIVE 3"	COLT COBRA	S&W M&P 2" SB	S&W M&P 2" RB	S&W CHIEFS SPECIAL 2"	S&W HAMMERLESS
MILITARY CHARACTERISTICS — DESCRIPTION FRAME / CYLINDER	STEEL STEEL	STEEL STEEL	STEEL STEEL	ALUMINUM STEEL	STEEL STEEL	STEEL STEEL	STEEL STEEL	ALUMINUM ALUMINUM	ALUMINUM ALUMINUM	ALUMINUM ALUMINUM	ALUMINUM ALUMINUM	ALUMINUM ALUMINUM
WEIGHT	2.0 LB.	1.86 LB.	1.88 LB.	1.27 LB.	1.26 LB.	2.0 LB.	1.44 LB.	.74 LB.	.94 LB.	.90 LB.	.68 LB.	.71 LB.
LENGTH OA	9"	9"	8⅛"	8⅛"	7 1/16"	8⅝"	7⅞"	6⅞"	7⅛"	6¾"	6⅛"	6¼"
BUTT EXTENSION BELOW SIGHT LINE	5/16"	4/16"	5/16" TARGET	4/16" MAGNA	4½"	5/16" TARGET	4/16" TARGET	4⅜"	4⅛"	4⅜"	4⅛"	4⅛"
TRIGGER SA PULL DA	3½ LB. 10½ LB.	4 LB. 10 LB.	4½ LB. 10½ LB.	4½ LB. 10½ LB.	3½ LB. 11½ LB.	2½ LB. 10 LB.	3 LB. 9½ LB.	4½ LB. 10½ LB.	3 LB. 10½ LB.	3¼ LB. 12 LB.	4 LB. 12½ LB.	 13 LB.
SIGHT RADIUS	5¾"	5¼"	4⅝"	4⅝"	4⅝"	4¼"	4¼"	3⅜"	3⅝"	3⅜"	3⅜"	3½"
NUMBER OF SHOTS	6	6	6	6	5	6	6	6	6	6	5	5
GROOVE & TWIST	5 1-18¾"	5 1-18¾"	5 1-18¾"	5 1-18¾"	5 1-18¾"	6 1-16"	6 1-16"	6 1-16"	5 1-18¾"	5 1-18¾"	5 1-18¾"	5 1-18¾"
PERTINENT DATA — PHOTOGRAPH NUMBER APPENDED "A"	12	11	10	1	8	14	13	6	9	7	4	5
PENETRATION 50 YARDS	3⅛"	2⅛"	3⅛"	3"	3 1/16"	2 15/16"	2⅞"	2 15/32"	2 13/16"	2 15/16"	2⅛"	2⅛"
RELATIVE PENETRATION COMBAT MASTERPIECE CONTROL	100	.92	100	.96	.98	.94	.92	.79	.90	.90	.92	.92
AVERAGE ACCURACY NAVY COURSE	286.7	235.2	258.1	266.8	220.5	277.2	215.3	194.5	219.7	218.7	187.7	148.7
AVERAGE KILLS 25 YDS (SILHOUETTE)	13.5	13.7	12.9	14.2	11.6	14.5	14.3	8.3	10.9	10.5	10.4	7.1
RELATIVE KILLS 25 YDS COMBAT MASTERPIECE CONTROL	100	101	95.5	105.1	85.9	107.3	106.0	61.5	80.7	77.7	77.0	52.5
AVERAGE ACCURACY 50 YDS. SLOW (Bob Mail)	101.6	68.6	76.3	81.6	61.2	71.4	60.6	46.8	51.5	68.1	62.2	29.3
AVERAGE KILLS 50 YDS. SILHOUETTE (Bob Mail)	8.3	6.9	7.7	6.2	7.8	6.7	6.1	4.6	5.9	6.8	4.7	2.4
MAX. ROUNDS PER DAY GUN EACH TYPE	1918	UNKNOWN	1570	1650	1500	1629	1427	2026	1421	1383	1041	1070
MUZZ. VELOCITY SERVICE ROUNDS (AMMUNITION)	578 FT/SEC	592 FT/SEC	629 FT/SEC	649 FT/SEC	635 FT/SEC	636 FT/SEC	653 FT/SEC	586 FT/SEC	538 FT/SEC	628 FT/SEC	614 FT/SEC	
PILOTS PREFERENCE	1	3	4	2	7	5	6	11	8	9	10	12

TABLE 2

MACHINE REST RESULTS

GUN	S&W COMBAT MASTERPIECE	S&W VICTORY	S&W M&P 3" STEEL	S&W M&P 3" ALUMINUM	S&W 3" CHIEFS SPEC.	COLT OFFICIAL POLICE 3"	COLT POLICE POSITIVE 5"	COLT COBRA
CYLINDER	2 × 1 1/8	2 1/2 × 3 1/4	2 1/2 × 3 3/8	2 5/16 × 2 7/16	2 5/8 × 2 1/8	3 1/2 × 2	2 1/2 × 1 1/4	4 7/16 × 5
CYLINDER	3 1/8 × 2 1/4	3 × 1	2 5/8 × 6 1/4	1 × 2	1 × 4 1/4	3 × 1 1/2	3 3/4 × 3 5/8	4 1/16 × 6 5/16
CHAMBER 1	1 1/2 × 2	1 5/8 × 4 3/4	2 1/4 × 5	2 5/8 × 1 7/16	7/8 × 2 3/4	1 7/8 × 2 7/8	2 1/2 × 7/8	1 15/16 × 8
CHAMBER 2	1 1/8 × 1 1/8	1 3/4 × 4	2 × 2	2 1/2 × 1	7/8 × 1 5/8	2 1/4 × 2 1/4	2 1/2 × 2 5/16	2 1/4 × 5 5/16
CHAMBER 3	2 × 1 3/8	1 5/8 × 3 1/8	1 1/2 × 7/8	1 1/4 × 1 5/8	1 × 1	2 7/8 × 3 3/4	4 11/16 × 2 3/16	2 3/4 × 5 1/2
CHAMBER 4	1 × 2 5/8	1 × 1 1/2	2 5/8 × 2 3/4	2 1/8 × 3 1/16	1 1/2 × 3/4	2 5/8 × 2 1/2	2 9/16 × 3 5/16	3 × 4 1/4
CHAMBER 5	1 × 1 3/4	1 1/8 × 3	1 1/8 × 2 3/8	2 3/16 × 3 5/16	1 1/8 × 1 7/8	2 1/16 × 3 3/4	2 1/8 × 3 1/2	2 7/8 × 6 1/4
CHAMBER 6	1 3/8 × 2 3/4	3 × 1	2 5/8 × 2 1/2	1 × 2 5/16		3 3/8 × 3 1/4	2 3/8 × 2 5/8	2 3/8 × 7 3/4
BEST CHAMBER RIGHT	1 3/8 × 2 3/8	1 3/4 × 2 3/8	1 1/2 × 2 3/8		1 1/8 × 2 3/4	2 5/16 × 3	3 15/16 × 2 7/8	3 × 4 1/8
BEST CHAMBER LEFT	1 × 1 1/8	1 × 1	2 1/2 × 2 3/4		1 1/4 × 3/4	3 1/2 × 2 3/4	2 5/8 × 5 1/4	6 5/8 × 10 3/8
CYLINDER RAPID DBL. ACT.	1 3/4 × 2	2 1/4 × 3 1/4	2 3/8 × 1 7/8	2 5/8 × 3 1/2	1 3/4 × 3	1 7/8 × 7/8	3 1/2 × 2 3/4	2 5/16 × 8 15/16
CYLINDER W/TRACER	1 3/4 × 3 5/8	5 1/2 × 5	2 3/8 × 3 7/8		2 × 4	4 × 6 1/2	4 1/4 × 6 1/2	
BEST CHAMBER HADCUTTER	3/4 × 1 1/8	7/8 × 1 1/2	1 × 2	3/8 × 2 3/8	1 1/8 × 1/2	1 3/8 × 1/2	2 3/8 × 1	1 3/8 × 3

ARM REST

GUN	COL... COB...
CYLINDER LOAD 1	5 3/4 ×
CYLINDER LOAD 2	2 5/8
CYLINDER LOAD 3	5 3/4 ×
CYLINDER LOAD 4	5 3/4
CYLINDER LOAD 5	6 3/16
CYLINDER LOAD 6	5 ×
AVERAGE	5 3/4

.38 CALIBI
MEASURE

WEIGHT OF RE

CYLINDER GR
CHAMBER G

E 2

M&P LUMINUM	S&W 5" CHIEFS SPEC.	COLT OFFICIAL POLICE 5"	COLT POLICE POSITIVE 5"	COLT COBRA
1/16 x 2 5/16	2 5/8 x 2 1/8	3 1/2 x 2	2 1/2 x 1 3/4	4 7/16 x 5
x 2	1 x 4 1/4	3 x 1 1/2	3 3/4 x 3 5/8	4 15/16 x 6 5/16
3/8 x 1 15/16	7/8 x 2 3/4	1 7/8 x 2 7/8	2 1/2 x 7/8	1 15/16 x 8
1/2 x 1	7/8 x 1 5/8	2 1/4 x 2 1/4	2 1/2 x 2 5/16	2 1/4 x 5 5/16
1/4 x 1 5/8	1 x 1	2 7/8 x 3 3/4	4 1/16 x 2 3/16	2 3/4 x 5 1/2
1/8 x 3 1/16	1 1/2 x 3/4	2 5/8 x 2 1/2	2 7/16 x 3 5/16	3 x 4 1/4
7/16 x 3 5/16	1 1/2 x 1 7/8	2 1/16 x 3 3/4	2 1/8 x 3 1/2	2 7/8 x 6 1/4
x 2 5/16		3 3/8 x 3 1/4	2 3/8 x 2 5/8	2 3/8 x 7 3/4
	1 1/8 x 2 3/4	2 5/16 x 3	3 15/16 x 2 1/8	3 x 4 1/8
	1 1/4 x 3/4	3 1/2 x 2 3/4	2 5/8 x 5 1/4	6 5/8 x 10 3/8
5/8 x 3 1/2	1 3/8 x 3	1 3/8 x 7/8	3 1/2 x 2 3/4	2 5/16 x 8 15/16
	2 x 4	4 x 6 1/2	4 1/4 x 6 1/2	
1 x 2 3/8	1 1/8 x 1/2	1 5/8 x 1/2	2 3/8 x 1	1 3/8 x 3

GUN	COLT COBRA	S&W M&P 2" SB	S&W M&P 2" RB	S&W 2" CHIEFS SPEC.	S&W 2" H'LESS
CYLINDER LOAD 1	5 3/4 x 7 5/8	3 3/8 x 4 7/16	3 3/8 x 5 1/2	4 1/4 x 4 5/16	2 7/16 x 6 5/16
CYLINDER LOAD 2	2 5/8 x 7 5/16	2 3/4 x 3 1/2	3 15/16 x 5 3/16	2 7/8 x 3 15/16	2 3/4 x 5 1/8
CYLINDER LOAD 3	5 3/4 x 7 5/8	3 1/8 x 4 7/16	4 3/8 x 6 1/4	1 15/16 x 3 3/4	2 1/4 x 3 1/4
CYLINDER LOAD 4	5 3/4 x 10 5/16	4 5/8 x 4 1/4	3 5/8 x 6 3/4	3 3/16 x 3 3/8	4 7/16 x 5 7/16
CYLINDER LOAD 5	6 3/16 x 6 1/2	3 7/16 x 2 3/4	1 1/16 x 2 3/8	1 9/16 x 5 15/16	4 1/8 x 6
CYLINDER LOAD 6	5 x 7 1/2	5 5/16 x 4 13/16	3 5/16 x 5 3/16	2 15/16 x 7 3/4	3 1/4 x 3 1/2
AVERAGE	5 3/16 x 7 15/16	4 x 4 1/32	3 7/16 x 5 3/16	2 3/4 x 4 13/16	3 1/4 x 5 1/16

ARM REST

2

.38 CALIBER SERVICE ROUND ALL GROUPS
MEASURED IN INCHES WIDTH X HEIGHT
25 YARD RANGE

WEIGHT OF RECOILING PARTS OF MACHINE REST 7.92 LB.

CYLINDER GROUPS ARE FULL CYLINDER GROUPS
CHAMBER GROUPS ARE FIVE (5) ROUND GROUPS

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